NATIONAL MUSEUM OF VICTORIA

THE JOURNAL of The Department OF AGRICULTURE

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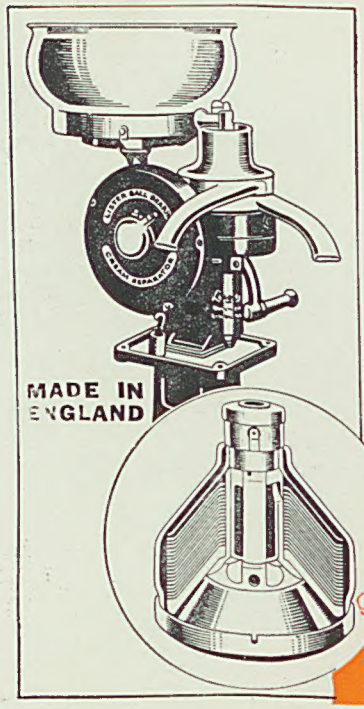

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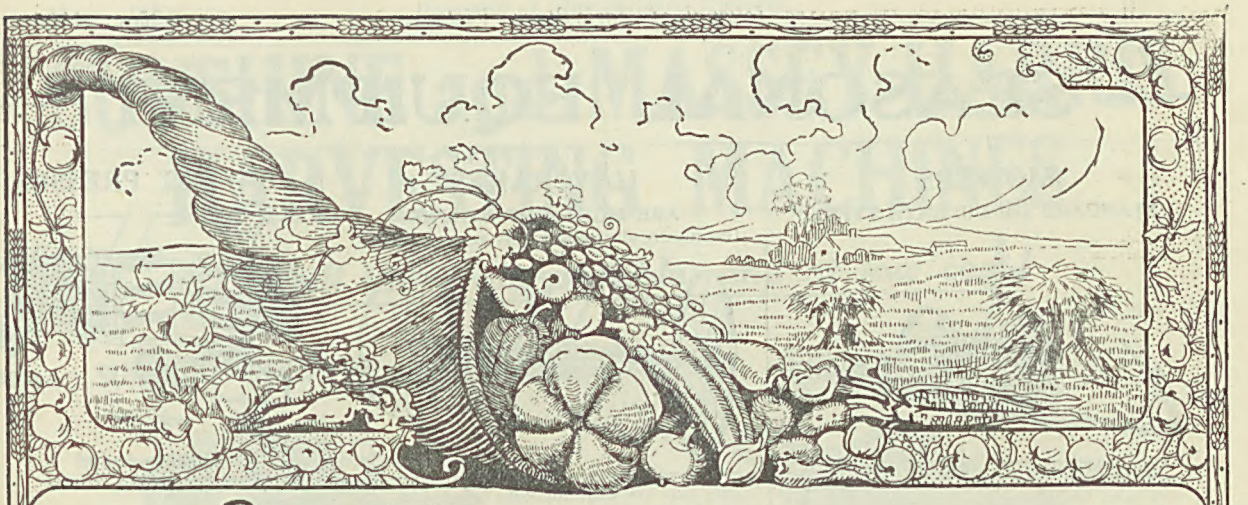

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Issued under the direction of the Hon. E. J. Hogan, M.L.A., Minister of Agriculture.

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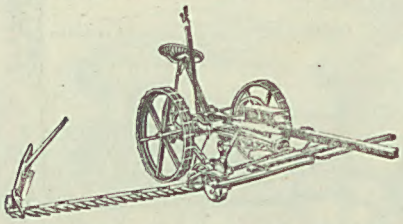

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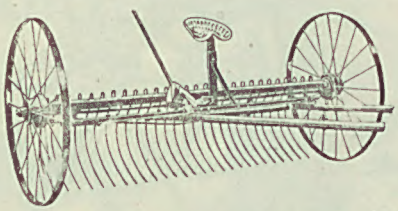

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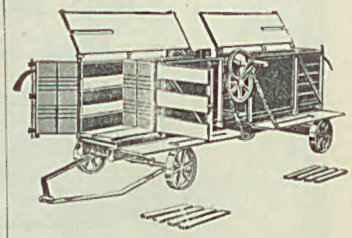

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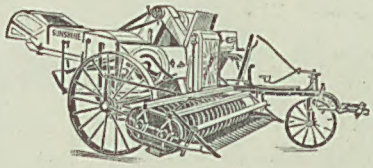

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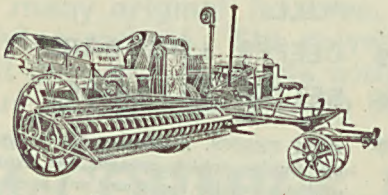

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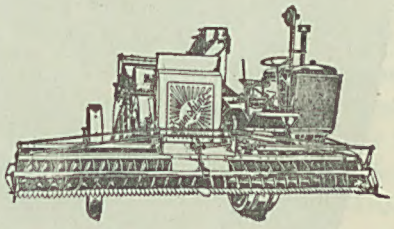

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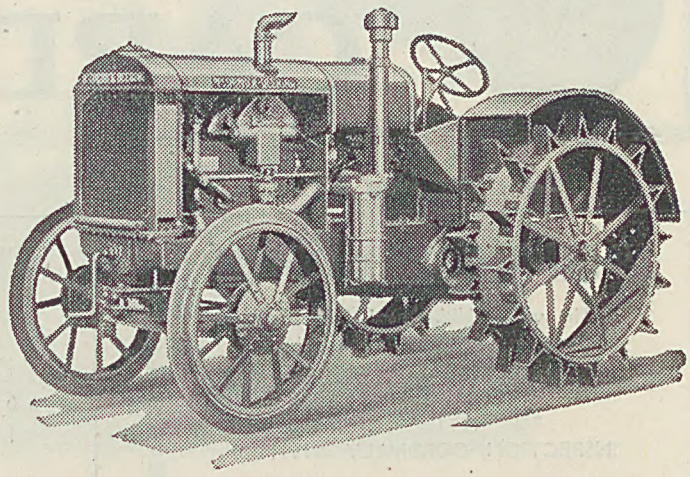

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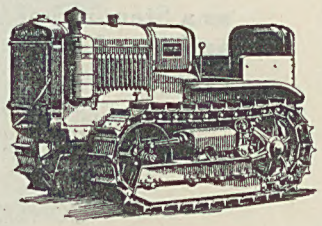

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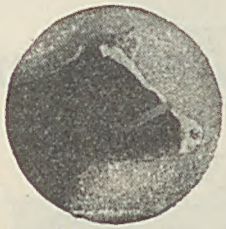

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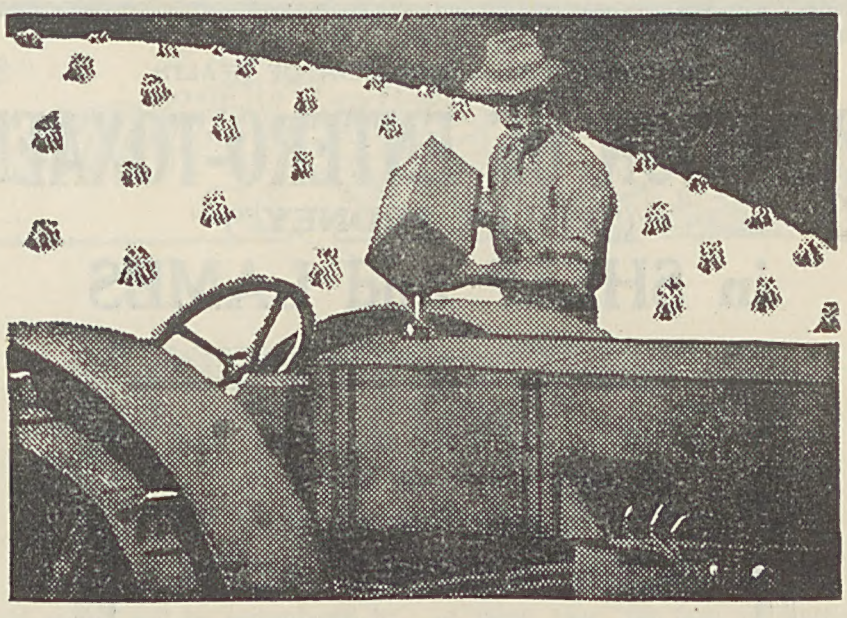

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NATIONAL MUSEUM OF ...

The Journal of the DEPARTMENT of AGRICULTURE of VICTORIA

Grade Herd Test

Annual Report 1935-36

W. J. Yuill, Acting Senior Herd Tester.

THE 1935–36 season will be remembered by dairy farmers south of the Dividing Range as one, the summer and autumn of which were unusually dry. Indeed some pioneers in the Western Area contend that the year was drier than in 1914, while some Gippslanders assert that last autumn was the driest on record. These conditions did not affect the irrigation areas adversely; while the North East valleys and East Gippsland received splendid early summer rains which materially helped production in those areas.

As a result of the bounteous rains of the 1935 autumn and the mild winter that followed, the dairy herds wintered well and calved in splendid condition. A record year of production seemed likely, when dry conditions set in in early summer and continued through the late autumn of 1936. The surprising feature of this year's report is that, despite these adverse seasonal conditions, the average yield of all herd-tested cows is only 11 lb. lower than that of 1934–35.

The great value of the irrigation areas to the State is seen in years of low average rainfall; it is well illustrated by the average yield of 260 lb. butter-fat in the Goulburn Valley and irrigation areas, as compared with Gippsland's 236 lb. per cow.

The South-western portion of the State suffered most severely from the dry conditions and, there, the average yield of the cows tested was reduced by 17 lb. butter-fat per cow as compared with the previous year, a loss equal to more than 200 tons of butter-fat for the total of 27,743 cows tested in that area. In the North-eastern area, the previous level of production was just about maintained.

The summary of the year's work shows that there is still a tendency for the herd size to increase, the average last year being 33 cows as compared with 29 cows for the years 1929 to 1932. The percentage of junior cows is still rising, the present figure of 47 per cent. being the highest ever recorded. The percentage of registered pure bulls in Association test herds has been approximately 81 per cent. for the past two years.

Mr. K. Gunn's champion grade cow "Pansy"—922 lb. butter-fat in 255 days.

Leading Units.

Rochester and Maffra No. 1 again lead the unit averages, while Dumbalk North and Yinnar No. 1 are also among the leaders. Eskdale No. 1, Swan Hill, Werribee South, Stanhope No. 1, Jindivick-Neerim, North Shepparton, Undera and North Murchison units all did well. The "high light" of the year is undoubtedly the fine record of the 613 cows in the Rochester Association, their average yield being 6,589 lb. milk and 321½ lb. butter-fat. Fifteen of the 26 herds tested in this unit exceeded 300 lb. butter-fat, seven averaging over 350 lb.; while four exceeded 400 lb. In the same unit, 129 of the cows exceeded 400 lb. butter-fat including 29 that passed the 500 lb. mark. The top cow yielded over 600 lb. There is no finer herd test story in Australia than this effort of the Rochester Association.

Leading Herds.

The leading herd average of the year goes to Mr. R. Anderson of the Rochester Association. This herd, and its performance, greatly interested the large crowd which attended the Annual Field Day of the "V.U.C.T.A." on September 24th. Mr. Anderson's cows were selected from the leading herd test herds of the district, as recently as five years ago; since when the herd has been very prominent in the district records. The herd story is as follows:—

Year.	Cows finished Test.	Actual lb butter-fat yield per cow.	With allowances for Junior Cows.
1932–33 ..	13	378	478
1933–34 ..	15	441	521
1934–35 ..	21	412	475
1935–36 ..	24	452	515

During the past year Mr. Anderson's herd of 24 cows including juniors averaged 8,553 lb. milk, 5.27 test, and 452 lb. butter-fat. Six cows produced over 500 lb., the leading cow being "Roanie" a Shorthorn cow that yielded 14,784 lb. milk and 578 lb. butter-fat.

Mr. J. D. Pierce of Nanneella, a member of the same Association was close up with a herd average of 434 lb. for the same number of cows. Mr. W. J. Wade, President of the Maffra Association, had the fine average of 416 lb. butter-fat from his 33 pure-bred and grade jerseys. The herd of Mr. R. Rautmann of the same Association again exceeded 400 lb. Swan Hill Association had one 400 lb. herd owner in Mr. W. Prince. The highest milk yield honour for the year goes to Mr. J. Bullingham of Tongala. This grade herd of 38 Friesians averaged 10,764 lb. milk and 383 lb. butter-fat.

TABLE I.—HIGH-PRODUCING HERDS OF LESS THAN 20 COWS (IN ORDER OF MERIT).

Owner.	Association.	No. of Cows.	Average Yield Butter-fat.
			lb.
G. H. Bright ..	Dumbalk ..	15	396
J. McLeod ..	Bunyip ..	13	396
M. H. Lukins ..	Tallangatta ..	16	389
H. W. Raleigh ..	Rochester ..	10	386
T. Evans	Rochester ..	14	386
E. A. Swayn ..	Stanhope ..	19	385
M. J. Dickson ..	Undera ..	13	384
P. A. Freestone ..	North Murchison	17	381
J. McLennan ..	North Shepparton	17	377
C. J. Pierce ..	Rochester ..	18	376
E. J. Vagg ..	Leongatha ..	18	374
G. H. Harriman ..	Stanhope ..	12	371
H. Spiers	Rochester ..	14	369
H. W. Waterhouse ..	Pakenham ..	18	356
H. and R. McLennan	North Murchison	11	355
S. E. Paynter ..	Rochester ..	16	356
W. C. Orr ..	Stanhope ..	11	347
M. D. McEwan ..	Warragul ..	16	346
McKean Bros. ..	Leongatha ..	17	345

TABLE II.—HIGH-PRODUCING HERDS OF FROM 20 TO 40 COWS (IN ORDER OF MERIT).

Owner.	Association.	No. of Cows.	Average Yield Butter-fat.
			lb.
R. G. Anderson ..	Rochester ..	24	452
J. D. Pierce ..	Rochester ..	24	434
W. J. Wade ..	Maffra ..	33	416
R. Routmann ..	Maffra ..	24	412
W. R. Prince ..	Swan Hill ..	25	402
A. J. Matthey ..	Geelong ..	26	391
H. Sharples ..	Jindivick-Neerim	24	388
W. D. Norman ..	Beeac ..	27	387
J. Bullingham ..	Tongala ..	38	383
K. Gunn	Leongatha ..	37	382
E. B. Neave ..	Traralgon ..	32	382
W. Edney ..	Jindivick-Neerim	28	378
E. Gadd	Traralgon ..	28	376
Rawlinson Bros. ..	Werribee South	30	374
E. Bond	Cohuna ..	22	370
J. D. Crothers ..	Stanhope ..	20	369
T. McClusky ..	Tongala ..	26	368
G. Stanlake ..	Loch	20	367
G. H. Duck ..	Tongala ..	32	367
Collins and Cowling	Yinnar ..	22	366

Group of 500 lb. butter-fat grade Friesian cows in the herd of Mr. J. Bullingham, Tongala.

As usual the herds with the highest butter-fat yields are to be found in the section for herds of 20 to 40 cows, and not in the herds of under 20 cows as might be expected.

Messrs. A. J. Matthey of Geelong, H. Sharples and W. Edney of Jindivick–Neerim; K. Gunn of Leongatha; E. B. Neave and E. Gadd of Traralgon; and G. Stanlake of Loch, as usual, figure in this list. Some new names occur this year as will be seen in Table I. The herds of Mr. G. Bright of Dumbalk, and J. McLeod of Bunyip just missed the 400 lb. butter-fat mark by a few pounds.

Reference to the previous annual reports will show that the majority of the herds in Table I. have been prominent from year to year. Messrs. Lukin, Swayn, Freestone, C. J. Pierce, Harriman and Paynter were all included in the 1935 list of high producing herds of less than 20 cows. Some fine performances have been put up by a number of new herds which are included on this occasion.

In the Table for herds of 40 to 60 cows, are some of the State's champion producing herds, for here large herds are to be found with splendid figures of production. This list is headed by Messrs. H. E. Keele and Son, of whose herd of nearly 50 cows, 41 finished in the year with an average yield of 398 lb. Mr. Keele is a valuable member of the Central Council of Herd Testing and his herd has not averaged less than 360 lb. butter-fat during the past ten years—a splendid performance indeed.

TABLE III.—HIGH-PRODUCING HERDS OF FROM 41 TO 60 COWS (IN ORDER OF MERIT).

Owner.	Association.	No. of Cows.	Average Yield Butter-fat.
			lb.
H. E. Keele and Son	Rochester ..	41	398
S. Esler	Undera ..	45	364
W. Cardwell ..	Eskdale ..	52	364
J. G. Howell ..	Leongatha ..	44	362
J. Charlton ..	Stony Creek ..	45	361
L. A. Peace ..	Leitchville ..	44	352
C. P. Bubb ..	Narracan ..	45	350
A. G. Watson ..	Tongala ..	44	342
T. S. Lord ..	Port Campbell	56	340
J. F. Pearce ..	Tallangatta ..	42	336
W. Colls	Jindivick-Neerim	41	335
R. G. Singleton ..	Maffra ..	44	334
Macknamara, No. 2..	Werribee South	48	332
A. E. Barton ..	Kiewa ..	60	330
J. Waite	Traralgon ..	53	328
C. P. Tobin ..	Eskdale ..	52	328
T. D. Rhodes ..	Drecite South ..	43	327
G. C. Black ..	Casterton ..	58	326
L. Jones	Dumbalk North	53	322
R. Hanchett ..	Camperdown ..	42	319
G. R. Charlton ..	Stony Creek ..	47	319
A. J. Trotter ..	Port Campbell..	47	317
H. J. Axford ..	Kongwak ..	55	316

Mr. J. G. Howell of Leongatha again has several of his great herd over the 500 lb. mark. A much belated correction of last year's report is due to this owner. Owing to an error, six of his eleven

"over 500 lb." cows were credited to Mr. G. Gwyther of Leongatha Association. Messrs. L. A. Peace of Leitchville, P. Bubb, Narracan, A. E. Barton, Kiewa Valley, C. P. Tobin, Eskdale, L. Jones, Dumbalk North, H. Jasper, Kongwak, and T. S. Lord, of Port Campbell, were also included in the previous year's list. As will be seen from Table III. quite a number of splendid performances have been made by new herds. Mr. W. Cardwell's fine grade Jersey herd from the Upper Mitta Valley is usually prominent; but Mr. Esler's Undera herd has worked up into second place with the great effort of 364 lb. butter-fat for 45 cows. Mr. J. Charlton of Stony Creek, who represents one of the pioneer families of herd testing in this State, has a herd average of 361 lb. butter-fat for 45 cows.

The first twelve herds in the section for herds of 60 to 80 cows are remarkably consistent performers, several of them having appeared for a number of years past. These include the herds of Messrs. Furphy, Walker Bros. (a pioneer herd), Webster, Clyne, Hamilton Bros., J. B. Fuller, Clement, Jessop, Kelliher Bros., A. S. Ford, and A. Crosthwaite of Kiewa Valley. The herds of Messrs. Wheeldon, Harney, Coolahan, Macknamara Bros., Moore and Co., R. T. Mitchell, are consistent performers among the very large herds. Messrs. Walker, Moore, and Mitchell, are all members of the Central Council of the V.U.C.T.A.

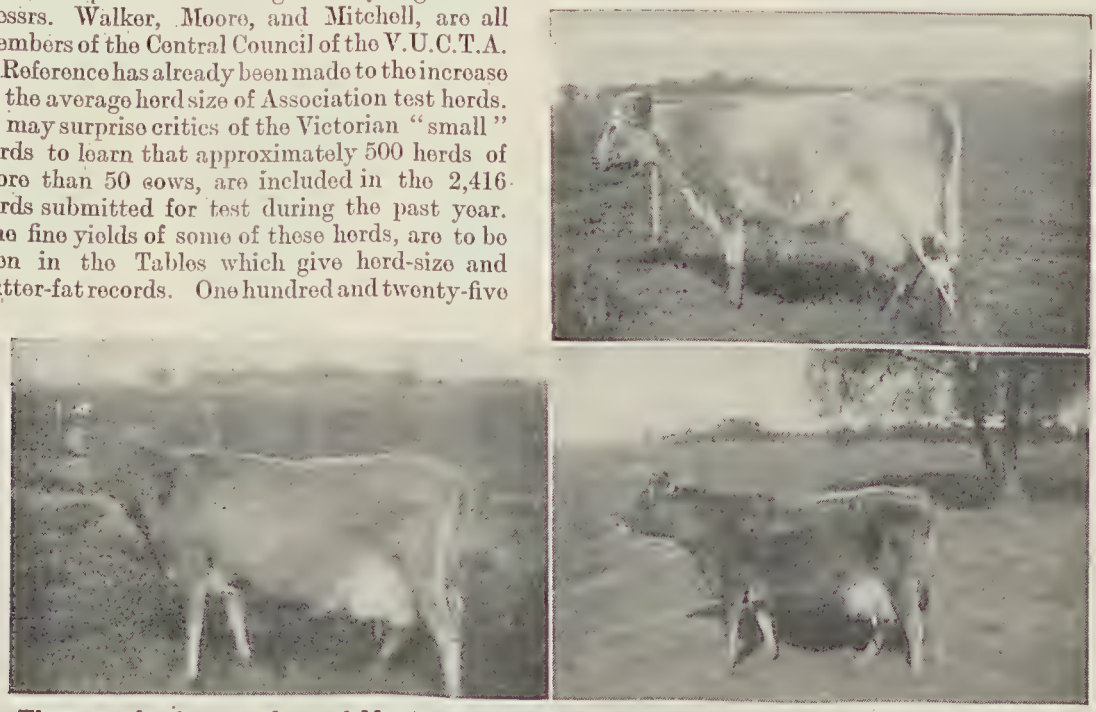
Reference has already been made to the increase in the average herd size of Association test herds. It may surprise critics of the Victorian "small" herds to learn that approximately 500 herds of more than 50 cows, are included in the 2,416 herds submitted for test during the past year. The fine yields of some of these herds, are to be seen in the Tables which give herd-size and butter-fat records. One hundred and twenty-five of these herds were of more than 70 cows; forty-seven being of more than 80 cows; sixteen over the 100 mark, and three over 150 cows in number. The largest herd consisted of 160 cows.

Reference to Table VI. will show that 747 herds in the Western Area averaged 37 cows, being closely followed by 289 in North-Eastern Victoria which averaged 35 cows. Large herd size, however, is not a virtue, unless it is accompanied by rational yields of milk and butter-fat.

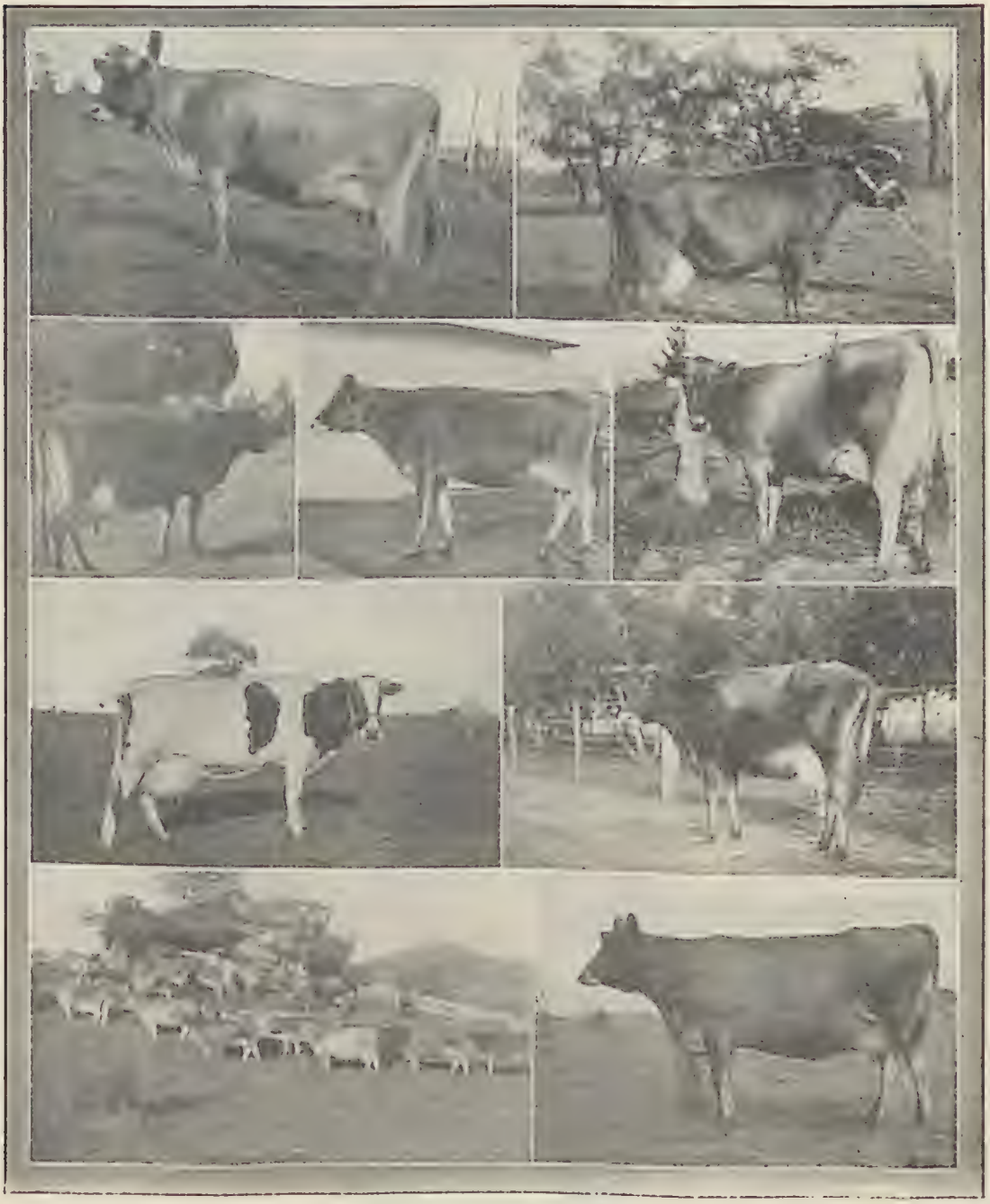
The Leading Cows.

At the head of the leading 20 cows of the year stands Mr. Ken Gunn's "Pansy" (now dead). Pansy first came under notice as a two-year-old when she yielded 438 lb. butter-fat. Later, she produced 655 lb. butter-fat as a senior-two-year-old, and shattered all State records by yielding 15,270 lb. milk, testing 6.04 per cent. and 922 lb. butter-fat in 255 days, when she was withdrawn from test, after an accident. "Pansy" unfortunately died of milk fever, after freshening in August last. Her breeding was unknown, but she was a fine, big, robust grade Jersey cow.

Mr. W. Prince's cow "Daisy" is an exceptionally high testing Jersey with the high milk yield



Three productive members of Mr. R. G. Anderson's herd.—Top, "Roany" (578 lb. butter-fat). Bottom left, "Possum" (568 lb.), and right, her daughter "Pearl" (442 lb. butter-fat as a junior two-year old).



Some Productive Grade Cows.

Top row—Mr. C. P. Bubb's "Betty" (566 lb. butter-fat), and right, Mrs. A. A. Dennis' "Merriwa" (588 lb.) Second row—Mr. H. Sharples' "Nellie Bly" (605 lb.), Mr. A. E. Barton's "Jessie" (608 lb.) and Mr. N. S. Terrier's "Misery" (648 lb.). Third row—Mr. H. M.Farlane's "Roads End Ianthe" (628 lb.) and Mr. Terrier's "Burramere Twilight 2nd". Bottom row—Some of Mr. A. E. Barton's herd ; and right, Mr. H. Furphy's "Norma" (577 lb. butter-fat.)

TABLE IV.—HIGH-PRODUCING HERDS OF FROM 61 TO 80 COWS (IN ORDER OF MERIT).

Owner.	Association.	No. of Cows.	Average Yield Butter-fat.
			lb.
E. R. Ford	Port Campbell	63	341
H. Furphy	Dumbalk North	62	337
Walker Bros.	Yinnar	61	322
F. Webster	Maffra	73	308
A. G. and B. Clyne	Maffra	72	305
Hamilton Bros.	Dumbalk North	63	305
W. Clement	Maffra	68	301
J. B. Fuller	Dumbalk North	63	301
H. G. Noble	Maffra	78	298
J. Willis	Bacchus Marsh	73	298
A. Jessep	Maffra	67	293
Sobey Bros.	Ballarat	69	288
A. G. Hallyburton	Pomborneit	64	288
J. Osborne	Maffra	64	287
W. C. Cayley	Werribee South	75	287
G. S. A. Clyne	Maffra	68	284
Kelliher Bros.	Jindivick-Neerim	73	274
F. Feely	Maffra	72	265
A. S. Ford	Kiewa Valley	70	265
A. Crosthwaite	Kiewa Valley	77	264
N. McKinnore	Warrnambool	76	256

TABLE V.—HIGH-PRODUCING HERDS OF MORE THAN 80 COWS (IN ORDER OF MERIT).

Owner.	Association.	No. of Cows.	Average Yield Butter-fat.
			lb.
W. J. Wheeldon	Warragul	87	311
E. and J. Harney	Warrnambool	84	303
—. Coolahan	The Sisters	100	300
Macknamara, No. 1	Werribee South	102	284
J. Mitchell	Tallangatta	83	273
E. Wright	Woodford	88	270
O'Connor Bros.	Warragul	86	267
J. Moore and Co., No. 2	Yarram	88	264
R. A. Borch	Nalangil	95	260
Podger Bros.	Noorat	88	256
J. Moore and Co., No. 3	Yarram	137	252
J. Moore and Co., No. 5	Yarram	125	251
J. Moore and Co., No. 1	Yarram	102	249
Bird Bros. and Dessent	Yarram	85	245
W. A. Henderson	Woodford	87	240
J. Murnane	Noorat	104	239
R. T. Mitchell	Coleraine	82	236
O. Shaw	Camperdown	99	232
Clark Bros.	Warrnambool	109	231

Mr. A. J. Matthey's "Flo" (604 lb. butter-fat).

character. She was sired by a bull bred from the champion herd of the 1920 Standard Test.

Perhaps the outstanding grade cow of the year is Mr. N. S. Terrier's "Misery," which completed two very even records of more than 640 lb. in the year under review. In this respect, she is much like "Ballara Bonnie" who performed similarly in the Standard Herd Test. "Misery" was not a robust calf—hence the name. She did not calve until nearly four years of age, but has been a great performer since that time. She is now a big, robust cow, as may be seen from the photo on page 561. Her current yield promises well, for she yielded 2.6 lb. butter-fat on the October test-day.

Mr. H. McFarlane's, Mr. H. Sharples', and Mr. A. J. Matthey's cows all appeared in last year's list of the "best 20 performers." "Flo" followed her fine record of 794 lb. butter-fat with one of 604 lb. In the milking trials at the Geelong Show in September, she produced 2.6 lb. butter-fat in twenty-four hours, having a long lead over her nearest opponent.

Mr. McFarlane's registered Friesian and Mr. Sharples' grade Jersey are very remarkable "long distance producers," as will be seen by the following records over a number of years :—

"Roads End Iantho" owned by H. McFarlane, Warragul.

Year.	Milk.	Test.	Butter-fat.
1932	11,897	3·79	451
1933	15,060	3·88	585
1934	15,199	3·54	538
1935	15,237	3·50	533
1936	19,338	3·36	650

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Mr. G. Duck's herd at Tongala.

"Nellie Bly" owned by H. Sharples, Jindivick–Neerim.

Year.	Milk.	Test.	Butter-fat.
1932 ..	6,196	6·14	381
1933 ..	7,463	6·11	456
1934 ..	8,770	5·96	523
1935 ..	10,024	6·07	609
1936 ..	9,893	6·12	606

Mr. E. B. Neave of Callignee, in the hill country near Traralgon, has a new entrant this year in the "best twenty". Last year "Ruth" yielded 588 lb., while "Bess" has the fine record of 625 lb. on this occasion. Here the high yield and high test characters are combined.

Mr. A. E. Barton's fine herd of 60 grade Jerseys is well known in the Kiewa Valley. The herd's average yield of 330 lb. butter-fat was capped by the splendid performance of "Jessie", a five-year-old cow, whose record of 10,986 lb. milk and 608 lb. butter-fat could have been improved upon if she had been fed more heavily. This is evident from her test figures of 1.53 lb. butter-fat in the ninth sub-period, after being down to 1.4 lb. on the sixth test, due to dry conditions. "Jessie" is a three-quarter-bred Jersey, her sire being "Beauty's King of Staghorn" while her dam, "Brownie", was by "Peter" from the Wagga Experiment Farm. She has a five years' average of 355½ lb. butter-fat. "Jessie's" performance will be more appreciated when it is stated that she is due to calve again early in October.

Another cow that was bred off a son of a Standard Test cow is owned by Mr. J. B. Watson of North Shepparton Association. This cow is "Nellie" the highest yielding daughter of "Island King 2nd of Jerseyholm". This bull proved a valuable investment, for his fourteen daughters have exceeded their dams by approximately 60 lb. butter-fat per record. This bull is a son of "Empress 5th of Jerseyholm", which, with her

TABLE VI.—SUMMARY OF HERD TEST ASSOCIATION DATA FOR THE YEAR ENDING 30TH JUNE, 1936. AND COMPARATIVE FIGURES FOR PREVIOUS YEARS.

Area.	Units.	Herds.	Tested Cows.	Junior Cows.		Pure Bulls.		Average Herd Size.	Average Production per Cow.		
				Number.	Percentage.	Number.	Percentage.		Milk.	Test.	Butter-fat.
									lb.		lb.
Gippsland ..	44	1,026	32,673	15,935	49·0	807	78·6	32·0	4,686	5·06	236·0
Western ..	34	747	27,743	12,415	45·0	603	80·0	37·0	4,730	4·80	227·0
Goulburn Valley..	15	354	9,861	5,113	52·0	279	79·0	28·0	5,854	4·44	260·0
North-Eastern ..	15	289	10,110	4,354	47·0	257	89·0	35·0	4,813	4·78	230·0
Totals ..	108	2,416	80,387	37,817	47·0	1,946	81·0	33·0	4,934	4·7	233·0

NOTE.—Records of Tarwin Lower, Wurt Wurt Koort, Myrtleford and Kolora Associations not available.

DATA OF PREVIOUS YEARS.

1934–35.. ..	113	2,446	79,701	36,116	45·3	1,991	81·4	32·6	5,309	4·59	244·0
1933–34.. ..	134	2,910	92,953	43,394	46·0	2,214	76·0	31·7	4,723	4·51	212·0
1932–33.. ..	141	3,383	104,009	46,392	44·6	2,619	77·0	31·0	5,290	4·55	241·1
1931–32.. ..	130	3,098	89,619	36,946	41·3	2,323	75·6	29·0	5,393	4·58	247·3
1930–31.. ..	132	3,085	90,360	32,867	36·4	2,251	73·0	29·0	5,383	4·30	234·0
1929–30.. ..	116	2,604	76,032	24,439	32·1	1,653	71·0	29·0	4,944	4·59	226·1
1928–29.. ..	96	2,229	63,277	19,246	30·4	1,354	64·0	30·0	5,080	4·38	223·3

NOTE.—There has been a loss of one unit—but there has been an increase in the number of tested cows although there were four annual reports outstanding. The lower milk yield contained a slightly higher average test. The average percentage of junior cows is a record, while the percentage of registered bulls is similar to last year. The average herd size is also the highest yet attained.

A group of cows on the farm of Mr. H. Furphy at Dumbalk North.

dam and grand-dam are among the noted producers of the Standard Herd Test.

A remarkable feature of the list of "best twenty cows" is that several of the cows possess the high milk yield and high test characters, a combination rarely attained within the limits of any one breed. Mr. Anderson's Shorthorn and Mr. McFarlane's registered Friesian obtain their high butter-fat record from very large yields of low testing milk. That they are really great dairy cows is shown by their high yields over many years.

Several other cows appear on the list for the first time. To appear in the "best twenty" of 80,000 cows is evidence of unusual dairy ability,—to repeat that performance marks a cow as being one of the State's champion producers, no matter what her breed or breeding.

This year's annual report appears four months earlier than on any previous occasion. This was made possible by the attention of Secretaries to Rule 34 of the Herd Testing regulations. Their continued co-operation is requested so that the report may appear in the year in which the records were made.

TABLE VII.—TWENTY LEADING COWS WITH DETAILS OF OWNERSHIP, IDENTIFICATION, PRODUCTION, AND BREED OF SIRE, ETC.

Owner.	Association.	Name of Cow.	Brands.	Milk.	Test.	Butter-fat.	Sire.
				lb.	%	lb.	
Ken Gunn ..	Leongatha ..	Pansy ..	L : 7 40	15,270	6·04	922	Unknown
Wm. Prince ..	Swan Hill ..	Daisy ..	—	8,816	7·65	675	Peerless Eclipse of Meadowvale
N. S. Terrier ..	Winchelsea ..	Misery ..	HE : 14 27	11,380	5·69	648	Jersey
				11,397	5·66	645	
H. McFarlane ..	Warragul ..	Roads End Ianthe*	REG'D	18,584	3·4	628	Burnbank Iona Alcarta
E. B. Neave ..	Traralgon ..	Bess ..	E : 41 12	9,920	6·3	625	Jersey Grade
S. E. Paynter ..	Rochester ..	Diamond ..	BR : 8 27	10,838	5·7	618	Pure Shorthorn
K. Stockel ..	Maffra ..	Phyllis ..	OV : 34 14	10,985	5·56	611	Unknown
S. Esler	Undera ..	Lulu ..	B : 17 18	10,826	5·6	610	Jersey
A. E. Barton ..	Kiewa ..	Jessie ..	K : 9 84	10,986	5·5	608	Beauty's King of Staghorn
H. Sharples ..	Jindivick-Neerim	Nellie Bly* ..	J : 42 29	9,893	6·12	605	Grade Jersey
A. J. Matthey ..	Geelong ..	Flo* ..	RL : 5 8	11,069	5·46	604	Unknown
Mrs. A. A. Dennis ..	Peninsula ..	Merrinee ..	MP : 7 7	11,654	5·0	588	Unknown
R. G. Anderson ..	Rochester ..	Roany ..	BR : 50 4	14,684	3·9	578	Shorthorn
H. Furphy ..	Dumbalk North	Norma ..	D : 16 53	9,555	6·04	577	Grade Jersey
J. Rose	Leongatha ..	Leura 2nd of Jersey Hill	REG'D	9,580	5·9	569	Jersey
H. E. Keele and Son	Rochester ..	Sweet Maid ..	BR : 14 50	10,343	5·4	568	Goulburn Twylish 2nd
R. G. Anderson ..	Rochester ..	Possum ..	BR : 50 16	9,075	6·2	568	Goulburn Twylish 2nd
C. P. Bubb ..	Narracan ..	Betty ..	N : 22	10,248	5·52	566	Meadow Prince of Warenda
A. E. Richardson ..	Mountain View ..	Lady ..	MV : 38 2	10,761	5·26	566	Unknown
L. A. Peace ..	Leitchville ..	Bertha ..	AH : 16 76	12,275	4·5	565	Jersey

* These cows appeared also in last year's list of best twenty cows.

The average results obtained in each of the units is set out in the following tables which show the number of herds tested in each unit, the total number of cows, the average yield of butter-fat, the percentage of junior cows and the number of pure-bred bulls.

Comparison of the average yields with those of last year reveals the effects of the adverse season. At the same time the results obtained by many of the units must be regarded as very satisfactory.

Gippsland Area.

Association.	Herds.	Cows.	Junior Cows.	Pure Bulls.	Butter Fat.
			%		
Maffra No. 1 ..	23	915	56	26	292
Yinnar No. 1 ..	26	723	48	23	275
Dumbalk North ..	26	1,037	40	23	274
Jindivick-Neerim ..	27	609	45	18	267
Maffra No. 4 ..	23	1,039	53	20	261
Narracan No. 3 ..	26	626	45	21	261
Leongatha No. 1 ..	12	321	55	11	259
Loch	22	645	53	11	257
Warragul No. 2 ..	26	476	51	18	257
Narracan No. 2 ..	25	490	46	17	255
Maffra No. 2 ..	15	597	63	10	255
Mountain View ..	23	722	51	19	255
Maffra No. 3 ..	20	883	65	15	254
Warragul No. 1 ..	25	766	42	21	251
Jindivick-Neerim No. 1	19	510	45	18	251
Sale	19	624	61	19	248
Dumbalk	13	380	46	12	246
Toora-Welshpool ..	27	906	44	26	244
Bunyip	28	691	57	26	244
Traralgon No. 1 ..	18	722	50	19	243
Gainsborough ..	11	446	41	8	242
Pakenham	27	755	52	25	241
Leongatha No. 2 ..	18	687	57	13	241
Kongwak	26	1,040	33	22	240
Yinnar No. 3 ..	20	577	44	15	239
Mirboo North ..	27	743	46	24	237
Wonthaggi	26	739	54	21	237
Leongatha No. 3 ..	29	731	50	14	233
Korumburra No. 1 ..	25	1,001	53	21	232
Yarram	27	1,220	47	35	228
Fish Creek	25	636	41	11	227
Peninsula	29	516	53	16	227
Lang Lang	26	777	57	24	225
Bairnsdale	10	294	46	7	224
Traralgon No. 2 ..	19	705	50	19	220
Warragul No. 3 ..	24	678	47	13	218
Korumburra No. 2 ..	27	974	55	22	217
Poowong No. 1 ..	15	615	55	9	214
Poowong No. 2 ..	20	890	45	16	212
Stony Creek.. ..	23	704	46	18	210
Korumburra No. 3 ..	28	825	39	15	205
Boolarra North ..	25	733	43	17	204
Yinnar No. 2 ..	25	682	39	14	203
Foster	27	766	42	16	178
Orbost	24	987	47	17	175

North-Eastern Area.

Association.	Herds.	Cows.	Junior Cows.	Pure Bulls.	Butter Fat.
			%		
Eskdale No. 1 ..	15	638	32	11	291
Tallangatta No. 1 ..	19	800	40	19	259
Upper Murray No. 1..	14	414	..	22	257
Swanpool No. 2 ..	26	623	48	19	244
Eskdale No. 2 ..	14	517	44	8	240
Euroa	22	455	41	16	229
Tallangatta No. 2 ..	22	797	42	21	226
Moyhu	19	599	55	17	224
Alexandra	16	474	38	14	228
Kiewa Valley No. 2 ..	22	1,209	51	20	221
Upper Murray No. 1..	16	748	26	21	219
Swanpool No. 1 ..	23	649	58	22	215
Milawa No. 1 ..	23	735	39	17	204
Walwa	13	336	58	12	202
Kiewa Valley No. 1 ..	25	1,116	41	18	199
Myrtleford	Records not to hand in time for inclusion.				

Western Area.

Association.	Herds.	Cows.	Junior Cows.	Pure Bulls.	Butter Fat.
			%		
Beeac	29	1,061	48	28	249
Dreeite South ..	27	904	61	25	249
Warrnambool ..	22	1,114	40	26	246
Ballarat	15	337	45	15	245
Camperdown ..	23	853	37	23	241
Woodford	20	1,176	39	21	237
Condah	22	725	44	31	236
Winchelsea 1 ..	27	971	50	16	235
Bacchus Marsh ..	25	845	47	22	232
Ondit-Irrewarra ..	24	892	48	14	231
Noorat No 1 ..	23	1,208	37	23	228
Portland	20	540	28	12	228
Gellibrand Valley ..	26	761	51	16	226
Macarthur	5	199	47	6	225
The Sisters	24	1,127	46	24	224
Cobden	26	969	44	14	224
Winchelsea No. 2 ..	29	741	48	18	224
Pomberneit	22	932	41	22	223
Geelong	28	671	49	23	223
Casterton	25	833	45	20	222
South Glenelg ..	22	345	39	17	217
Nalangil No. 2 ..	23	844	44	22	214
Newstead	20	527	46	13	213
Ecklin	19	1,005	36	23	212
Paschendale ..	19	604	44	7	212
Coleraine No. 1	16	611	46	14	208
Nalangil No. 1 ..	27	1,215	45	23	207
Apollo Bay	27	773	42	13	207
Keayang	4	462	45	11	204
Coleraine No. 3 ..	14	938	44	30	202
Port Campbell ..	26	1,098	53	8	196
South Purrumbete ..	23	1,273	39	5	194
Mortlake	21	744	48	7	191
Port Campbell No. 2	24	445	72	11	165

Note.—Kolora Association suspended operations temporarily owing to severe drought conditions of 1936. Data of Wurt Wurt Koort Association not available for same reason.

GOULBURN VALLEY AREA.

Association.	Number of Herds.	Number of Cows.	Per cent. Junior Cows.	Number Pure Bulls.	Averages.		
					Milk.	Test.	Butter-fat.
					lb.		lb.
Rochester	28	613	54	23	6,589	4·87	321
Werribee South	24	949	59	17	6,427	4·52	290
Stanhope No. 1	24	533	54	15	6,159	4·64	286
Swan Hill	26	516	56	24	6,245	4·56	285
North Shepparton	21	475	45	14	6,212	4·48	279
Undera	26	708	54	14	6,105	4·52	276
North Murchison	26	632	38	25	5,726	4·73	271
Tongala No. 1	26	813	45	20	6,207	4·27	265
Stanhope No. 2	21	568	58	18	5,648	4·58	259
Leitchville No. 1	20	800	50	20	5,638	4·37	247
Kerang No. 1	26	781	50	27	5,359	4·49	241
Leitchville No. 2	21	568	56	22	5,618	4·13	233
Cohuna 1	20	780	55	18	5,630	4·04	229
Calivil	23	538	56	8	4,988	4·41	220
Pyramid Hill	22	587	46	14	5,059	4·19	209

Wool Production and Trade

ACCORDING to "Wool Production and Trade—1935-36" issued by the Imperial Economic Committee, the statistical position of wool at the close of the 1935-36 season in June was very satisfactory. Despite various economic and political disturbances, the steady pressure of demand upon a somewhat reduced supply had maintained prices considerably above those for the previous season.

Wool moved steadily from the primary markets throughout the year. Unsold stocks at selling centres at the end of June, were the smallest since June, 1929. The United Kingdom, the world's largest wool consumer, maintained her interest in all markets, and the increased requirements of Japan and the United States compensated for the reduced purchases of Germany and Italy. The wool purchased had, for the most part, gone directly into consumption in most of the large manufacturing countries, particularly the United Kingdom and the United States. As far as could be ascertained, stocks had not accumulated, except in Japan.

Germany and Italy continued their policy of regulating imports of wool and encouraging domestic production. Other smaller countries such as Poland and Turkey, also partly dependent on foreign supplies, sought to increase the numbers and improve the quality of their flocks. In South America, both Argentina and Uruguay appointed Government commissions to supervise and assist the sheep-raising industry.

During the season, there was a marked absence of those acute price fluctuations which had so often embarrassed the industry in recent years. Prices showed a rising tendency until March-April, after which there was a slight reaction, followed by a recovery in July and August. The prospective shortage of merinos, combined with the fashion preference for worsteds, caused prices of fine wools at first to rise more rapidly than those of crossbreds. Subsequently the position was partly adjusted by the improved activity of the woollen section of the industry and the increased substitution of finer crossbreds for merinos. Coarse crossbreds and carpet wools had met with a consistently keen demand throughout the season.

"Wool Production and Trade" is issued by the Imperial Economic Committee as a free supplement to subscribers to its monthly "Wool Intelligence Notes." Non-subscribers may obtain copies direct from the office of the Imperial Economic Committee, 2 Queen Anne's Gate Building, London, S.W.1. Its price is 2s. 6d., plus postage and exchange, say 3s. 6d. in all.

Victorian Fruit Exports

Review of 1936 Season

The R.M.S. Orion leaving Port Melbourne with a shipment of Victorian apples.

The following report was prepared by Mr. S. R. McColl, Commercial Officer, of the Trade Branch of the London Office of the Agent-General for Victoria.

A COMPARISON of shipments of apples, pears and plums from Victoria to the United Kingdom and Continental ports for the 1935 and 1936 seasons reveals that, during 1936, exports of apples increased by 103,627 cases and pears by 90,561 bushel cases. There was a decrease of 11,183 half-bushel cases in the shipments of plums. In all fruits there was a nett increase of 183,947 packages over the 1935 season. Particulars of the exports are set out in the accompanying table which shows also that apples were shipped to 11 ports in 1936 compared to only seven ports in 1935. The new ports exploited were Southampton and Manchester, in the United Kingdom, Dunkirk and Rotterdam. Additional ports to receive pears direct were Hull and Glasgow, the former port receiving plums also.

The whole of the exports from Victoria came forward in 61 steamers, as against 49 in the previous season. Of these 49 landed fruit at London, 23 at Liverpool, 18 at Hull, nine at Glasgow, four at Southampton, and one at Manchester.

Inspection Activities.

With very few exceptions each steamer was met on arrival at either Tilbury, King George or Royal Albert Docks, and as many different marks and varieties of apples and pears were examined as was possible in the time available. As only one officer was available to do the work, and as the arrival and discharge of fruit ex two and more steamers frequently occurred on the same day at different docks, the amount of detailed inspection covered was limited. At one period during the season eleven steamers discharged fruit in London within a period of fourteen days. However, every effort was made to examine on the markets those marks not seen at the docks. In this connexion Auctions and Private Treaty Merchants at

Spitalfields were visited three days a week on Monday, Wednesday and Friday; and at the Borough Market on Tuesday and Thursday as time permitted.

Owing to the attention given to the examination of shipments at London, very little time was available to visit other ports. Only one visit each was made to Glasgow and Southampton. This is to be regretted, as merchants in the outer ports appreciate independent reports on the outturn of the fruit consigned to them.

Full detailed reports on each shipment examined were forwarded to the Department of Agriculture, Victoria. While, as previously mentioned, every effort was made to examine all the fruit possible, there were necessarily at various times many different lots which did not come under my notice. The following comments therefore are based on the fruit actually examined by me.

Apples.

The more important defects observed in the condition of Victorian apples during the season, set out in their order of importance were as follows:—

(*a*) Dull, wilted and shrivelled appearance of some varieties, principally Jonathans.
(*b*) Very forward condition of varieties, principally Jonathans.
(*c*) Bitter pit.
(*d*) Fungal rots.
(*e*) Bruising.

The first two defects might be taken together.

The first four shipments to arrive in London were in good condition, but commencing with the *Orontes'* arrival on the 13th April, in which several marks opened up in a forward condition with some showing immature and shrivelled fruit, each subsequent shipment contained quite a number of marks in a forward condition and showing also part affected with wilt and shrivel. Three shipments were outstanding for generally defective fruit—the *Anchises* to Liverpool and Glasgow was reported with much fruit of several varieties in a wilted condition, and later the *Raranga* and *Port Dunedin* consignments to London arrived in a very forward condition and showed considerable quantities of fruit with severe wilt or shrivel.

The Jonathan variety was the one most seriously affected, and included many lots with dull colour and stale appearance. Other defective varieties which came under notice, included King David, Dunns, Delicious, R.D.C. Cleopatra, London Pippin, Duke of Clarence, C.O.P. for wilt and shrivel, and Cleopatra, C.O.P., Dunns, L.P., R.B., Statesman, Yates and Granny Smith in a too forward condition.

With the exception of the consignments ex the three steamers mentioned, I wish to make it quite clear that the bulk of the consignments opened up in good condition. There were faulty lots which included part of the fruit in a good condition and part defective. This variation in individual lots, it is considered, must have been due to adverse conditions in Victoria.

COMPARISON OF VICTORIAN FRUIT EXPORTS, 1935 AND 1936 SEASONS.

Destination.	1936.			1935.		
	Apples.	Pears.	Plums.	Apples.	Pears.	Plums.
	Bushel Cases.	Bushel and Standard Cases.	Half-bushel Cases.	Bushel Cases.	Bushel and Standard Cases.	Half-bushel Cases.
London	368,687	374,495	4,630	317,865	306,069	15,043
Liverpool	73,867	26,893	908	42,361	13,513	2,105
Hull	57,747	2,450	427	65,604	..	..
Glasgow	45,400	6,305	..	35,255	..	..
Manchester	1,999	..	..	..	..	..
Southampton	14,804	..	..	..	..	..
Hook of Holland	11,402	..	..	10,683	..	..
Rotterdam	9,603	..	..	..	..	..
Antwerp	6,003	..	..	1,500	..	..
Dunkirk	1,004	..	..	..	..	..
Hamburg	19,979	..	..	33,600	..	..
Totals	610,495	410,143	5,965	506,868	319,582	17,148

Bitter Pit.

Bitter pit was observed in the first shipment of apples ex R.M.S. *Otranto*, in most varieties. Cleos., R.D.C., and a few lots of C.O.P. were badly affected; in other varieties the disease was not very serious. It is some time since so many lines of Victorian C.O.P. opened up in such a good, sound condition, and so free from pit injury. Up to 20s. per case and better was realized for this very attractive fruit.

The pit continued in following steamers, showing mostly in R.D.C., C.O.P., Cleos., Dunns, Delicious, Granny Smith and Alfristons, ranging from a slight to moderate degree with odd apples severely affected. In a few packs it was estimated that from 10 per cent. to 50 per cent. of the fruit was affected. Bitter pit, however, was not a very serious defect this year, and only in odd lots did it affect the selling value of Victorian apples to any extent. It appeared throughout the season but only to a slight extent right up to the last few shipments, in which the Granny Smith, S.T.P. and Jonathan varieties were showing a few apples affected from a slight to severe degree.

Fungal Rots and Bruising.

These two troubles were not very serious, although more prevalent than during last season. Fungal rots showed principally in C.O.P., Jonathans, London Pippin, and, towards the end of the season, in Statesman and a few lots of Yates. In practically all instances the rots were seen in fruits in rather a forward condition. The bruised fruit was invariably in the larger sized apples, and again was usually associated with fruit in a forward condition.

Quality.

From the reports submitted on each shipment it will have been noticed that reference has been made to the many lines of high quality apples marked "Fancy" grade shipped during the year. My only additional comment in this connexion is to urge growers and exporters to give their fruit the grade it deserves. If fruit is well graded and packed and is obviously "Extra Fancy" quality, it does not seem good policy to under grade it in the eyes of buyers. Whether fruit is sold "forward" or shipped "on consignment," it should be the policy of all concerned to raise the general level of all fruit exported from the State. It may be said that fruit is sold on the condition and appearance in which it is seen by buyers, and while this is true in most cases, it is also a fact that "Extra Fancy" fruit from some of the other States and from competitors in other countries invariably realizes a margin over "Fancy" quality. There is no reason why Victorian grown fruit of "Extra Fancy" quality should not do likewise, but the first move towards this end is to grade and brand it as such.

Defects observed in the quality of apples were many and varied as follow:—

(*a*) Apples below colour grade requirements and mixed colours;
(*b*) Excess russet, principally in Jonathans and Granny Smith varieties;
(*c*) Codlin moth;
(*d*) Mouldy core in London Pippins;
(*e*) Fungal rots, mostly in C.O.P. in early part of season and in Jonathans, S.T.N., and Yates in late season;
(*f*) Excess arsenical spray residue;
(*g*) Excess black spot, mostly mid-season to final shipments;
(*h*) Immaturity in few lots of Statesman, Jonathans, Granny Smith and Rokewood;
(*i*) Malformed apples in Alfriston and Jonathan varieties;
(*j*) Excessive hail blemish; and
(*k*) Jonathan spot.

This may appear a formidable list of defects, but with the exception of the first-mentioned item, the quantity of fruit affected was relatively small, and the reason for mentioning them at all is to impress upon those growers concerned the necessity of giving more attention to the grading of their fruit. Just a few severely russeted apples, a little codlin, malformed fruit or excess black spot, in an otherwise good pack, may mean the difference between a good sale and the fruit being passed over for better lots, and it must be remembered that there is plenty of fruit for buyers to select from.

Apples below colour grade, and Mixed Colours.

With respect to colour grade, it should be noted that, with the exception of the last few shipments, when consignments consisted mainly of Yates, Rome Beauty, Rokewood, and "even colour" varieties, each shipment contained quite a number of lots or either Jonathans, Delicious, Rome Beauty and King David with colour shortage varying from half a dozen apples up to 10 per cent. and 50 per cent. below the colour requirements for the "Fancy" grade, with, in some instances, many apples quite green.

Grading for colour was well done by the majority of packers. But I would say to those growers who failed to grade to the requirements of the

regulations, that they are doing harm not only to themselves, but also to Victorian fruit generally. Buyers, particularly in the early part of the season, insist on full-coloured dessert varieties, and if they are not to be had, give their attention to American Winesaps. These, although lacking freshness through long cold storage, nevertheless are sound and full coloured, and more attractive to the buying public than poorly-coloured Jonathans and other coloured varieties, arriving at this time.

With "mixed colours" it should be noted that the defect was not so much a contravention of the colour requirements, as the grading of apples of 100 per cent. colour with varying degrees of colour down to the minimum of 20 per cent., with, in some instances, a small part below the minimum. A pack of this kind is not as attractive to the buyer as a uniform and evenly-coloured pack, and I would strongly urge the grading of the fruit into the two grades of "Extra Fancy" and "Fancy." Provided that sufficient fruit is packed under the former grade it is considered that it will realize a premium over the "Fancy" grade, and that the "Fancy" grade itself will not suffer in price by keeping the grades down.

If it is at all practicable to do so, I should like to see the raising of the colour standard for Jonathans, and other varieties now being shipped with such a variation of colour. If growers fail to realize the desirability of packing their fruit to a higher grade, and to separate the "Fancy" and "Extra Fancy" quality, it may be desirable for the competent authority to make such action compulsory. This may be necessary to meet the competition that is increasing each year.

Packing and Grading.

The packing of most of the apples which came under my notice was generally satisfactory until towards the end of the season when, commencing with the *Balranald* until the final shipment ex *Tudor Star*, quite a number of lots in each shipment were very slack packed.

Grading likewise was consistently good throughout the season, but here again individual growers failed to comply with the regulations and shipped apples of sizes prohibited for export, such as 3-inch C.O.P. and Rokewoods, 3½-inch London Pippin, Yates and Jonathans 2 inch and under. In some instances apples marked 2¾-inch contained mostly 3 inches and over, and there were also some instances of mixed sizes in the same case.

Prices.

The opening prices quoted by auction for Victorian apples for the 1935 and 1936 seasons were as follow :—

	1935.		1936.	
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
C.O.P.	8 0 to	20 0	16 6 to	19 3
Granny Smith ..	10 0 „	13 0	9 3 „	13 0
Jonathan ..	11 0 „	13 0	9 3 „	10 6
Dunns	8 6 „	10 6	7 6 „	9 9
London Pippin ..	8 0 „	10 0	8 6 „	10 0
Delicious ..	10 0		7 6 „	8 6
K.D.	10 0		8 0 „	10 0
Ribston ..	8 0 to	8 6	9 0 „	9 9

Packing apples for export.

Loading portion of a record shipment of apples and pears.

Only those varieties available for comparison are quoted. These figures do not show an appreciable difference for top prices in most varieties with the exception of Jonathans, which made 2s. 6d. per case more in 1935. But while prices held firm in 1935 and appreciated later owing to the failure of the English berry season and a general shortage of apples, the reverse proved the case in 1936.

With the exception of Granny Smith and C.O.P. varieties, which held a fairly high level throughout the season, prices continued to fall until very low values had to be accepted for all other varieties about the opening of the English berry season in early June. At this time and following weeks excellent quality Rome Beauty, Yates, Jonathans, Stewart Seedling, Statesman, Sturmers, &c., were making only 5s. to 7s. a case, with some outstanding lots a little better. Prices did improve towards the end of July with diminishing arrivals, but with the exception of Granny Smith's, few of the other varieties made better prices than 9s. to 10s. a case. At the same time last year similar fruit realized 13s. to 14s. per case, but as stated earlier, 1935 season was an exceptional one in favour of Australian fruit. August prices for Sturmers were as low as 3s. to 4s. per case.

No one reason can be given for the poor prices realized this season. Whereas everything worked together for the good of Australasian apples in 1935, many factors operated against satisfactory prices for 1936. Perhaps the more important of these may be summarized as follows :—

(*a*) *Increased competition from United States of America and South Africa in April.*

The arrival of apples at United Kingdom ports from United States of America and South Africa were—

	April, 1935.	April, 1936.
United States of America ..	196,000	361,000
South Africa	41,000	109,000
Total	237,000	470,000

Increase 233,000 cases.

Increase of arrivals from all sources 123,000 cases.

On the 2nd April, 1936, prices quoted for fruit from countries other than Australia were as follow :—

	s.	*d.*		*s.*	*d.*
South Africa—					
Dunn's	8	9	to	11	0
Golden Delicious ..	8	3	,,	9	9
Delicious	7	0	,,	9	0
United States of America—					
Winesaps	8	6	,,	10	3
Newtown Oregon ..	9	0	,,	12	0
Newtown Californian ..	8	6	,,	10	0

New Zealand—	
Alfristons	9 6 to 11 0
Gravenstein	7 6 „ 8 9
Virginia (barrels)—	
Albemarle	18s. to 30s. per barrel.
Winesaps	
Yorks	

(*b*) *Heavy arrivals in May*, which from all sources totalled 2,273,000 cases as against 1,806,000 in 1935, an increase of 467,000 cases. Of this increase, Australia's share was 298,000 cases, the arrivals for 1935 and 1936 being 1,467,000 cases and 1,765,000 cases respectively.

May to June arrivals of apples from Australia and New Zealand showed an increase of 765,000 cases on the corresponding months of 1935. The South African increase in the same period was 70,000 cases.

There was an increase of nearly 1,000,000 cases for the period, March to July inclusive, as follows :—

Arrival of Apples into United Kingdom (March to July inclusive).

—	1935.	1936.	Increase.
Canada	512,000	515,000	3,000
United States of America ..	1,004,000	1,177,000	173,000
South Africa ..	69,000	260,000	191,000
Australia	3,766,000	4,142,000	376,000
New Zealand ..	739,000	947,000	208,000
Totals ..	6,090,000	7,041,000	951,000

Increase of 951,000 cases, or nearly 16 per cent.

Argentine shipments are not included, but these showed little change from the previous year, the quantities being 17,463 cases in 1935 and 17,583 cases in 1936.

(*c*) *Influence of unsatisfactory condition* of several early shipments which opened up in a forward condition and showing lot of wilted fruit from Victoria and other States, and later in the season influence of brown heart in Tasmanian Sturmers affecting prices generally.

(*d*) *Limitation of Continental markets* and early collapse of same; some apples shipped to the Continent were returned to London for sale.

(*e*) *Unseasonable weather conditions*, and last, but not least, in the opinion of many, was the shortage and consequently high prices for vegetables in the early part of the season, limiting the purchasing power of the public—vegetables having the first call as a necessity, and fruit coming second as a luxury. This condition, it is suggested, had some influence on prices realized for early shipments, and affected prices for oranges and other fruits also.

Before ending on this matter, it is of interest to record that as late as 16th July, 1936, old crop Washington Winesaps were sold on the London market at from 7s. to 9s. per case, with an average of 7s. 9d., at the same time as Victorian apples were realizing 6s. 6d. to 7s. for Dunns, 6s. 6d. to 9s. for Yates, and 6s. 6d. to 7s. 6d. for Rokewood.

Pears.

Some 364,751 bushel cases and 15,656 standard cases of pears were shipped to London in 37 steamers. Liverpool received 26,893 cases, Hull 2,450 cases, and Glasgow 6,305 cases. The 9,734 cases originally consigned to Hamburg were subsequently discharged at London. In addition several fairly large parcels of pears were sold in Glasgow during the season ex consignments to other ports.

William bon Chretiens.

The first shipment of William bon Chretien pears ex s.s. *Mongolia* did not arrive in as satisfactory condition as the corresponding shipment in 1935. The condition varied from green hard to yellow ripe and there was a lot of superficial skin marking throughout the consignment. The second shipment on the *Sultan Star* was in a much better and more uniform condition, with only part showing skin marking. Later arrivals of W.B.C. from southern districts were in a very forward condition, showing much waste from scald and core breakdown.

Other Varieties.

Of the 35 shipments, I have classified the general condition of the consignments as follows :—

Twenty-nine shipments "Good" or "mostly good"— odd lots in a forward condition and showing a little waste.

Five shipments "variable" which would include part of the consignments in a good hard sound condition, and part ripe with some waste.

One shipment "very variable" and showing appreciable quantities in a ripe to over-ripe condition.

In the last two or three shipments there came under notice quite a few lines showing many pears with fungal rots. There were also one lot of the Thompson variety and two lots of Beurre Bosc which, externally, appeared to be quite sound,

but which, when cut, showed a browning in the core and surrounding tissues. No information is available to enable a definite opinion being given as to the nature of the trouble, but it is considered by research officers that it may be "brown heart."

Considering the large quantities of pears shipped from the State, the general condition of the consignments was satisfactory.

The quality of the many varieties was consistently good throughout the season. There were defects of a minor character such as excess black spot, codlin, and excess spray residue, but the quantity of fruit affected, and the extent of the defects were relatively small.

Some growers consistently packed their pears as "Good" grade when the quality justified "Fancy" grade. It may be advanced that pears are sold according to actual condition and quality, and not to the grade marked on the case. This may be so to personal buyers; but all fruit is not sold on personal examination by buyers. Orders are frequently received over the telephone or by mail, and when "Fancy" grade is stipulated, a sale is lost, even though the quality of the "Good" grade on hand is quite up to "Fancy." The pears are sold subsequently of course, but generally at lower values. Every agent or merchant endeavours to clear his consignments on a firm market as soon as possible in view of the regular weekly shipments coming to hand, so it is to the advantage of individual growers to have their own fruit sold early, to avoid deterioration, particularly when consignments arrive in a forward condition.

There is little to be said with respect to the grading of pears. With few exceptions this was consistently good in all shipments, although there were a few lots of very small pears—all under 2-in. size.

There is still room for improvement in the packing of many lines of pears. Whilst some of the larger pear exporters consistently put up an ideal pack, many of the individual growers fail to pack to advantage. Such defects were noticed as the finishing of the pack too high in the flat bushel case, so that the top layer and contents generally are bruised by lid pressure, and the sparing use of woodwool, when a more liberal supply would have prevented the case marking of the top row.

With very large pears it is recommended that they should be double wrapped. This is a practice adopted by some of the large exporters, and gives added protection, particularly when pears arrive in a forward condition—the larger pears invariably are more advanced than the smaller sizes. Yellow skinned varieties appear to require additional protection, as when the pears become marked the skins turn black. A few lots of large sized Doyenne du Comice pears which arrived in a slightly forward condition opened up showing quite a lot of bruising due to tight packing. The Doyenne du Comice pear is one that sells well on this market and invariably makes top prices, and in my opinion would justify any additional expenditure incurred in packing it in trays.

Schedule of Pears.

It is considered that the time has arrived when consideration should be given to the inclusion in the Commerce Act Regulations of a schedule covering the varieties of pears which may be exported, and uniform abbreviations for all such varieties. During the past season, it is understood that some 70 or more varieties were shipped from Australia to United Kingdom ports. If a schedule is adopted it is suggested that some consideration should be given to the elimination of many unsuitable varieties, and to those varieties of which only small quantities are now exported.

With regard to the suggestion that uniform abbreviations should be adopted, it has been noticed, particularly in the case of pears from Tasmania, that the variety, as often as not, is indicated by letters only, for instance, "B.A." might stand for either B. d'Anjou or Black Achan. The absence of uniform nomenclature leads to confusion among agents and buyers alike.

So far as Victoria is concerned, there are considerably fewer varieties exported, and most of them are well known. Even so, uniformity of marketing would be appreciated, as the abbreviations now used lack uniformity. For instance, the Bourre Bosc variety has been shown as "Beau B.", "B.B.", "Bosc", "B. Bosc", and "Bourre Bosc". Many similar examples could be quoted with other varieties.

Labelling and Stencilling.

The new system of printing the trade description on the end of the cases, as adopted by many growers and exporters, is considered a great improvement on the old method of stencilling. Attractive labels are quite satisfactory, but care should be taken to see that they are properly applied. Several instances came under notice this year where the labels were peeling from the cases, and a large number were lying on the floor of the shed, resulting in the total absence of any trade description.

With regard to the stencilling of cases I think it will be agreed that this method has long outlived its usefulness, and should be replaced by the "direct printing" method or labels. Certainly much of the stencilling was badly applied this season. The area available for stencilling on the end of the flat bushel pear case is definitely limited, and when stencils containing many words for the name of the exporter are included, the space available for grade, size, and variety is rather small. The whole leads to a very indistinct brand and lacks individuality. I feel sure that the appearance of the packs from some of the co-operative sheds would be greatly improved by the adoption of a simplified and distinct brand, and in this connexion I would suggest that the branding adopted by most of the Doncaster growers might be taken for a guide.

PLUMS.

The quantity of plums shipped to United Kingdom ports showed a large decrease in comparison with 1935. Exports in 1935 amounted to the equivalent of 17,148 half-bushel cases, compared with only 5,965 half-bushel cases in 1936. It may be of interest to record that some 7,609 quarter cases and a parcel of trays, each containing four punnets of 6 lb. each, came forward from New South Wales. The latter is the American type of package for plums. From these figures it appears likely that New South Wales will be a keen competitor on the plum market in future years.

The Victorian plums were shipped on three steamers. A parcel of 100 cases only of Grand Duke on the R.M.S. *Mongolia*, landed in good condition, showing from 25 per cent. to 50 per cent. colour with stalks green and no internal discolouration. The merchant who received this small lot displayed one case in the English half-bushel basket, in which they gave the appearance of freshly picked plums from an English orchard. This lot cleared quickly at 7s. 6d. to 8s. a case.

The bulk of the plums was shipped per S.S. *Sultan Star*—3,565 half-cases to London, and 495 half-cases to Liverpool. The general condition of this shipment was a vast improvement on anything shipped in previous years. This was undoubtedly due to grading to uniform sizes, and the harvesting of the fruit at the right stage to ensure them opening up in England in a condition more backward than forward. The packing likewise was uniformly good, although quite a few lots were not wrapped. The result of this shipment confirmed the opinion expressed last year that exports should be limited to those varieties proving themselves free or nearly so from the discolouration of the flesh injury, which so seriously prejudices their market value. Grand Duke, President, Jefferson, Coe's Golden Drop, Pickering, and Satsuma arrived in the best condition.

Packing Export Pears at Shepparton.

The following are some of the prices realized, viz. :—

	s.	d.		s.	d.
Grand Duke	7	0	to	10	0
President	7	0	,,	10	0
Jefferson mostly	7	0	,,	10	0
One lot 20 cases	12	0	,,	14	0
Coe's Golden Drop ..	7	0	,,	9	0
Pickering	8	0	,,	8	6

So far as I can learn, there was no low range of prices for these varieties due to the uniformly good sound condition. In other years owing to variations in size and condition many lower ranges of prices were obtained.

The following varieties were all affected with severe internal browning and although they were mostly firm or fairly firm and made reasonably good prices, it would be wise to discontinue shipping these varieties and concentrate on those that have definitely proved themselves over the past few years :—

	Case.				
	s.	d.		s.	d.
R. (? Reine Claude) ..	6	0	to	7	0
M. (? McLaughlin) ..	7	0	,,	8	0
YE. (? Yellow Egg) ..	7	0	,,	8	0
Premier	5	0	,,	6	0
Mostly	5	0			
Narrabein (eleven cases only)	7	0	,,	7	6
Diamond	2	0	,,	6	0

In addition to the above varieties it is understood that small lots of the Blue Belgium and Wickson varieties were shipped, but these were not seen, and no information is available as to their condition or the prices realized. Blue Belgium, which arrived in fairly good condition in 1935, is an attractive plum and may do well here.

One Liverpool firm reported a consignment of "Presidents" to be fairly satisfactory, realizing up to 9s. a half-case. "Premiers" were said to be unsatisfactory.

The third consignment of 965 half-cases to London arrived ex *New Zealand Star* on the 3rd April, some 26 days after the previous one. These were reported to be generally unsatisfactory. October Purple, President, Golden Drop, and Reine Claude were generally soft and collapsing; Yellow Egg, green to green-yellow, case marked, bruised, and flesh brown; and Grand Duke, very fair to poor. Some prices realized were as follows :—

	s.	d.		s.	d.
Yellow Egg	0	6	to	2	0
Golden Drop	7	6	,,	10	0
Reine Claude	3	6			
Grand Duke	9	0	to	10	0
Some	3	6	,,	4	0

No reports were available for the Hull and Liverpool consignments.

From information I have been able to collect, it is estimated that the average prices for all varieties would be considerably higher than any previous year's outturn.

Buyers were not slow to appreciate the marked improvement in the grading and packing of this fruit, and with the sound condition of many varieties, agents could offer lots with confidence and the good lines sold freely at remunerative prices.

Book Review

"Nature in Farming"—By J. W. Paterson, B.Sc., Ph.D., Professor of Agriculture, University of Western Australia.

This admirable little book, which was first published some twenty years ago and which has again been revised and brought up to date, has stood the test of time and has proved its worth, both to the student and the farming community in general.

The author has taken cognizance of local conditions and treated the subject of agricultural science in a broad manner giving due prominence to the allied sciences.

The botanical section is sufficiently covered to enable the student to study the life history of the crops likely to be grown in Australia, without delving too far into the technicalities of the subject.

The climatic and soil problems are treated in a practical manner with the specific aim of teaching the principles underlying the various cultural operations and showing their influence on plant growth.

The chapters on crops and their diseases are sufficiently dealt with to give the student a basis for future study, and to assist the farmer in recognizing the diseases and to understand the general principles underlying their control.

This concise publication can be confidently recommended for students commencing a study of agricultural science and for farmers who aim to obtain a knowledge of the fundamental principles of the science of farming.

The book is published by Carroll's Ltd., 566 Hay-street, Perth, W.A. Its price is 4s. 6d.

A. W. J.

The Rutherglen Experiment Farm

Results of Investigations

By W. E. Miller, M.Agr.Sc., Senior Inspector of Agriculture; C. P. Goulding, B.Agr.Sc., Manager, and J. A. Morrow, B.Agr.Sc., Cereal Experimentalist.

RESULTS of considerable importance to farmers and graziers of the North-East were demonstrated to visitors at the annual farmers' field day at the Rutherglen Experiment Farm on Friday, 30th November.

The object of the farm is not to attain financially profitable results as far as the farm itself is concerned, but to confer on agriculture the benefits of modern scientific advances by the prosecution of investigations and trials under practical and accurately recorded conditions concerning the problems involved in increasing the agricultural output of the State. By both experimentation and demonstration, the Farm has increased materially the agricultural and pastoral production of the district, and has indicated how still greater production may be attained.

The practice of top-dressing, so important now to the agriculture of the State, was initiated at Rutherglen. The first official experiments with subterranean clover and Wimmera rye-grass were conducted here also, and the experience gained in the establishment of such improved pastures on a 22-inch rainfall led to the Departmental advocacy of this means of increasing production. At Rutherglen, stock-carrying capacity has been doubled by pasture improvement.

Numerous new wheat varieties have been distributed from the Farm after their prolificacy, disease resistance, and general suitability have been tested, and, over the past 20 years, numerous investigations in cereal growing have been of great value to North-eastern growers.

Although such valuable results have been achieved, many problems remain to be solved. The maximum utilization of improved pasture can be attained only when fodder conservation for use in lean periods is undertaken, when the most efficient breeds of stock are used, and when stock diseases can be economically controlled. Further investigations of these questions are required, while the most desirable frequency for top-dressing is still a debatable point. Similarly, cereal production per acre is likely to be increased further by more detailed knowledge of the uses of both superphosphate and nitrogenous manures, by the rotation of crops and pastures, and by the use of the still better varieties now under test.

The experiments in progress at Rutherglen include :—

1. Pasture Investigations.

(*a*) Methods of pasture establishment.

(*b*) Maintenance of pastures—management and top-dressing.

(*c*) New species and strains—grasses and clovers.

(*d*) Measurement of carrying capacity of various types of pasture.

(*e*) Effect of pastures on soil fertility.

(*f*) Fodder conservation, meadowhay and silage.
(*g*) Control, by pasture management, of undesirable types, e.g., Red Grass.
(*h*) Trials with forage crops.

2. Stock Investigations.

(*a*) Fat lamb trials—comparison of breeds.
(*b*) Stock feeding methods.

3. Cereal Trials.

(*a*) Variety tests of wheat and oats.
(*b*) Time and rate of seeding tests—wheat and oats.
(*c*) Manurial tests—wheat and oats.
(*d*) Cultivation tests.
(*e*) Soil moisture and nitrification investigations.
(*f*) Permanent rotation tests.
(*g*) Green manurial tests with wheat and oats.
(*h*) Disease control investigations—wheat and oats.

Location and Soils.

The farm is located 5 miles south-east of the Rutherglen railway station. Its total area is 1,100 acres, of which 150 acres are laid out in experimental plots. The balance is devoted to the production of pedigreed seed wheat and oats, the maintenance of a registered Border Leicester stud, and to general mixed farming of an experimental nature, including experiments and demonstrations with stock.

Three distinct soil types are present—(*a*) Grey cementy loams, containing buckshot, on the low-lying parts. These soils are imperfectly drained and difficult to cultivate; (*b*) Friable red loams, usually well drained; and (*c*) Gravelly hill soils.

The average rainfall (in inches) at Rutherglen for the last 35 years is as follows:—

Jan.	Feb.	Mar.	April.	May.	June.	July.
1·26	1·43	1·86	1·48	2·10	2·94	2·25

Aug.	Sept.	Oct.	Nov.	Dec.	Average Annual.
2·25	2·04	2·04	1·40	1·71	22·8

Crops and Live Stock.

Following are the details of the crops grown and stock carried on the Experiment Farm at the 1st September:—

Experimental area	150	acres
Wheat crops	75	,,
Oat crops	134	,,
Wimmera rye-grass (for seed only)	2	,,
Fallow	90	,,
Pasture	619	,,
Building reserves, yards, &c.	30	,,
Total area	1,100	,,

Live Stock.

Draught horses	17
Light horses and young draught stock	8
Dairy cattle, young cattle, and calves	78

Sheep.

Border Leicester (stud ewes)	245
,, ,, (rams for sale)	42
Flock ewes	440
Dry sheep	310
Total sheep	1,037
Total lambs	525

Pigs.

Miscellaneous	93

Harvesting Bulk Plots.

PASTURE IMPROVEMENT.

In the many districts of Victoria where the average annual rainfall ranges from 20 to 25 inches, several types of mixed farming are adopted, and in addition to the returns from wheat and oats, considerable revenue is obtained from wool, lambs and mutton, and dairying. Whatever the principal activity, a considerable portion of most farms is devoted to some form of grazing. Natural or introduced pastures supply practically all of such grazing, and the improvement of the carrying

capacity of those pastures is, therefore, of vital importance.

Considerable areas in the Rutherglen district are sown to wheat and oats, but the soils and climate are very suitable for the production of high grade pastures. The carrying capacity of virgin pasture here is approximately one breeding ewe to 1¼ acre. The principal methods by which this has been increased in many cases and may be increased in others are:—

1. The use of superphosphate as a top-dressing; and
2. The introduction of subterranean clover, Wimmera rye-grass, and lucerne.

A combination of these methods is capable of almost trebling the carrying capacity of unimproved pastures, a fact amply demonstrated by the experience at the Rutherglen Farm. To investigate the best and most economic means by which pasture improvement may be effected, and in an endeavour to find new methods of increasing and maintaining pasture growth, the following tests are being carried out:—

1. Pasture top-dressing tests. Fields Nos. 13, 6, 5, and 4.
2. Establishment of sown-down pasture, principally subterranean clover and Wimmera rye-grass, when the land is thrown out to pasture after the cultivation of cereal crops, viz., fields Nos. 9, 10A, 15, and 13.
3. Investigations with perennial pasture plants such as lucerne, perennial rye-grass, Phalaris tuberosa, &c. (Fields Nos. 4 and 7.)
4. Selection and trial of new strains of subterranean clover and Wimmera rye-grass. (Fields Nos. 2, 7, and 10.)
5. Comparison of the carrying capacity of sown rye-grass and clover pastures with natural pastures following a cereal crop. (Field No. 13.)
6. Trials to determine the effect of grazing methods on the composition of sown pastures. (Field No. 4.)

Pasture Top-Dressing Tests.

The Rutherglen Experiment Farm has the distinction of having conducted the first controlled experiments in pasture top-dressing in Australia (Field No. 13.) The original plots laid down in 1914 are still maintained, providing a unique record of the results from top-dressing after 22 years.

An area of poor virgin pasture was divided into five plots each of 3¾ acres, four of which have been top-dressed as follows:—(1) Superphosphate, 1 cwt. + lime 10 cwt. per acre; (2) superphosphate, 1 cwt. per acre; (3) Basic slag, 1 cwt. per acre; (4) superphosphate, 2 cwt. + nitrate of soda 1 cwt. per acre. These plots were manured every year from 1914 until 1920, since when the practice of manuring only every fourth year has been followed, the last manuring being in 1936. The remaining plot has not received any manure.

Originally the plots functioned mainly as demonstration areas, but for the past sixteen years a record has been kept of the number of days' grazing afforded, and of any loss or gain in the live weight of the sheep. Every year marked differences in the quantity and quality of the pasture provided in the several plots are apparent.

The most obvious differences to the eye are the increased numbers of early grasses and trefoils in the manured sections. This type of

PASTURE TOP-DRESSING TESTS—NATURAL PASTURES.

Sheep Grazing Trials.

Average Results for Sixteen Years, 1920–1935.

—	Super. 1 cwt., Lime 10 cwt. per Acre.	Super. 1 cwt., per Acre.	No Manure.	Basic Slag, 1 cwt. per Acre.	Super. 2 cwt., Nitrate of Soda 1 cwt. per Acre.
	Plot 1. Sheep Carried.	Plot 2. Sheep Carried.	Plot 3. Sheep Carried.	Plot 4. Sheep Carried.	Plot 5. Sheep Carried.
	Per acre.	Per acre.	Per acre.	Per acre.	Per acre.
Average for sixteen years 1920–35	2·0	1·9	1·2	1·7	2·1
Average for ten years 1926–35	2·7	2·5	1·6	2·2	2·8

Plots each 3¾ acres, manured in the autumns of the years 1914–1920 and then in 1924, 1928, 1932, and 1936 only.

pasture has largely replaced the tufty root grasses, which may still be seen in the unmanured plot.

The results of grazing over the past sixteen years are summarized in the table on the previous page.

The system of grazing adopted is to carry and fatten dry sheep, utilizing all the pasture, principally in the periods of its greatest growth. The figures obtained for carrying capacity, although somewhat higher than could be expected if the same sheep were carried on the plots throughout the year, give a direct comparison of the grazing values of these pastures, and demonstrate the great increase in carrying capacity obtainable by top-dressing with superphosphate.

The number of sheep carried per acre has been increased approximately 70 per cent. on the plot that has been treated with 1 cwt. superphosphate per acre, and rather more where lime and superphosphate have been applied. Further, additional live weight per acre has been gained on the manured areas, but the gain per sheep has been fairly constant on each of the plots.

Duration of Manurial Effects of Top-Dressing.

The greatest response, naturally, was given in the year of application, i.e., every fourth year, but a substantial increase in carrying capacity has been maintained in the three intervening years. This residual effect, although it varies with the seasons, lasts for many years, and there is also a permanent change in the nature of the pasture.

The accompanying table shows the average of the percentage increases in sheep carried on the manured plots as compared with that not manured in the years of top-dressing (every fourth year) and in the subsequent first, second, and third years after top-dressing.

These figures show clearly that the greatest increase in sheep-carrying capacity was given in the year of top-dressing with all manures, but that very considerable residual effects were maintained in the following three years. The use of lime in addition to superphosphate (Plot 1) certainly increased the number of sheep carried in each year, but the increase was not sufficient to justify its use compared with heavier dressings of superphosphate. From other experiments, it is considered that the additional growth of pasture in Plot 5 was due to the heavy application of superphosphate, rather than to the nitrate of soda. When the experiment was commenced in 1914, both this manure and basic slag required investigation, but their use for top-dressing under Victorian conditions has since been shown to be unprofitable.

Summed up, the evidence of this experiment indicates the use of approximately 1 cwt. of superphosphate in alternate years as a basis for economic native pasture improvement by manuring under Rutherglen conditions. It may be desirable, however, to top-dress every year for the first few years, if maximum results are desired.

The botanical composition of the pastures has been changed considerably by the combined effects of manuring and heavy grazing. The result has been that the Wallaby grasses which constituted the bulk of the pasture at the inception of the experiment have been replaced on the manured plots by annual types, such as silver grass, brome grasses, barley grass, and annual clovers and medicks. On the unmanured plots the Wallaby still preponderates, although the other grasses have appeared also. In wet summers, love grasses and couch grass appear on all the plots.

PERCENTAGE INCREASE IN SHEEP CARRIED, 1924-1935.

	Plot 1.	Plot 2.	Plot 4.	Plot 5.
	Super. 1 cwt. plus Lime 10 cwt. per Acre.	Super. 1 cwt. per Acre.	Basic Slag 1 cwt. per Acre.	Super 2 cwt. plus Nitrate of Soda 1 cwt. per Acre.
	%	%	%	%
Years top-dressed	108	89	81	119
First year following	66	59	31	73
Second year following	62	43	25	66
Third year following	62	51	36	58
Average twelve years	75	61	43	79

Border Leicester Rams bred at the Rutherglen Experiment Farm.

SOWN PASTURES.

In the north-east, it is customary to allow the ground to revert to pasture after cropping for a few years. Various trials at the Rutherglen Experiment Farm indicate the value of subterranean clover in establishing a pasture of high-carrying capacity in a short time.

When fat lamb raising is attempted on virgin pasture, difficulty is experienced in successfully fattening the lambs. Top-dressing, in addition to increasing carrying capacity, so improves the feeding value of the pasture that first grade lambs may be produced. Further improvement in carrying and fattening capacity can be attained by the introduction of subterranean clover either by sowing down after a cereal crop or by other methods.

To determine the extent of this improvement in the pasture the top-dressing series was extended in 1931 to include sown pastures and volunteer pasture following a cereal crop. Wimmera rye-grass, 6 lb., and subterranean clover, 3 lb. per acre were sown with a cover crop of oats. The oat crop failed but there was an excellent germination of rye-grass and clover. In 1932, the volunteer pasture was very poor. The sown pasture became exceptionally well established. These plots were grazed lightly in 1932, and normal grazing commenced in 1933.

The average annual grazing given by the sown pasture since 1932 was 2·2 sheep per acre compared with 1·5 sheep per acre by the volunteer pasture, an increase of about ·75 sheep per acre.

Top-Dressing Subterranean Clover.

Experiments over some years have shown that well-established paddocks of subterranean clover respond to top-dressing with superphosphate in a remarkable way. The quick response obtained, even in dry years, is particularly valuable for fattening lambs in the winter and early spring.

Marked response on sown pasture to top-dressing in early spring

In order to measure accurately the increased growth obtained from the application of various amounts of superphosphate and lime to an old paddock of clover and other grasses, a comprehensive experiment has been carried out in No. 5 Field. The pasture was cut by means of a hand-mower as often as it reached a grazing stage, the dry weight of produce weighed, and its feeding value obtained by chemical analysis. Additional plots have been mown at less frequent intervals as part of an investigation concerning grazing methods.

Filling a pit silo with surplus pasture.

In addition to measuring the results obtained from fertilizers in the year of application, the residual effects for two years following without further top-dressings were measured.

Sown Pasture Top-dressing Tests.

The pasture consisted principally of subterranean clover sown down seven years previously. Other grasses such as silver grass, soft brome grass, barley grass, and Wimmera rye-grass were present to the extent of approximately 20 per cent. of the dry weight. The plots were manured early in the autumn as described, and the pasture mown frequently. The comparisons were based on the weights of dry clippings mown per acre. It is considered that this method of measuring the yields conforms closely to that which would be obtained under grazing conditions:—

Top-dressing Applied.	Percentage Increase of Manured Pastures over Unmanured Pasture. Average Results for Three Years.	
	Immediate Effect in Year Applied.	Residual Effect in Year After Applied.
No Manure.. ..	—	—
Super. ½ cwt. per acre	44·9 per cent.	15·5 per cent.
Super. 1 cwt. per acre	58·4 per cent.	24·1 per cent.
Super. 1½ cwt. per acre	70·2 per cent.	50·4 per cent.

Summarized, the results show that on an old clover pasture, the carrying capacity may be considerably increased by the use of superphosphate. By using ½ cwt. per acre, annually, an increased yield of approximately 50 per cent. may be expected. When 1 cwt. per acre is applied in alternate years, the total increase will be somewhat smaller, but this may be offset by the smaller cost of application. An important advantage of top-dressing is its use in quickly increasing the supply of pasture when a possible shortage becomes apparent.

The carrying capacity of well-established clover paddocks which are top-dressed annually with ½ cwt. super. per acre in this district ranges from 2·5 to 3 sheep per acre.

Differential Grazing Trials.

It is recognized that the manner in which a pasture is grazed may influence the botanical composition to a marked degree. Differential Grazing Trials were established in No. 4 Field to investigate the effect of various grazing methods on the pasture and to determine what treatment would be most likely to maintain a desirable botanical composition. The pasture on which this test is being conducted consists mainly of a mixture of Wimmera rye-grass, subterranean clover, silver grass, and crowfoot.

It has been demonstrated that, in an established grass and subterranean clover pasture, the percentage of clover in subsequent years may be increased by heavy grazing in the late spring, and vice versa.

The application of this principle is important in the management of pastures, particularly where the pasture in later years may be reserved for hay. Experience has shown that hay with a high clover content is much easier to handle, and provides superior fodder.

New Strains of Grasses and Clovers.

There are many species of grasses and clovers sown down in Victoria, but, where the average

annual rainfall is less than 25 inches, and long dry summers are frequent, perennial types of sown pasture such as English rye-grass and white Dutch clover can seldom be grown successfully on any but very fertile soils. In such districts, however, considerable success has been obtained with heavy seeding, annual plants of which subterranean clover and Wimmera rye-grass have proved to be the most satisfactory. Lucerne, though difficult to establish and to keep pure, may provide, on well-drained soils, valuable green feed in the summer for a number of seasons.

The principal disadvantages of annual pastures are their tendency to dry off rapidly in the early summer and their inability to make rapid growth immediately following summer or early autumn rains. It has been discovered, however, that certain strains of Wimmera rye-grass and subterranean clover have a longer growing period than the types now sown, and these are under trial to determine their suitability for grazing conditions. Promising new types of perennial grasses, notably Phalaris tuberosa, and Victorian strains of perennial rye-grass, are also under trial.

Stacking meadow hay with the grab stacker.

DAIRY CATTLE.

A grade Friesian herd is maintained. By close attention to breeding and feeding, the butter-fat yields have been economically raised to a very satisfactory standard.

The average production of heifers during their first lactation is approximately 230 lb. in nine months, this figure being gradually increased during subsequent lactations. Mature cows usually average 300 lb. or more, individuals producing 350 to 370 lb.

The main investigations being carried out with the dairy herd are—

1. The possibility of profitable dairying under Rutherglen conditions;

2. Feeding methods—including costs of growing, and feeding value of various fodders and supply of requisite fodders during various seasons;

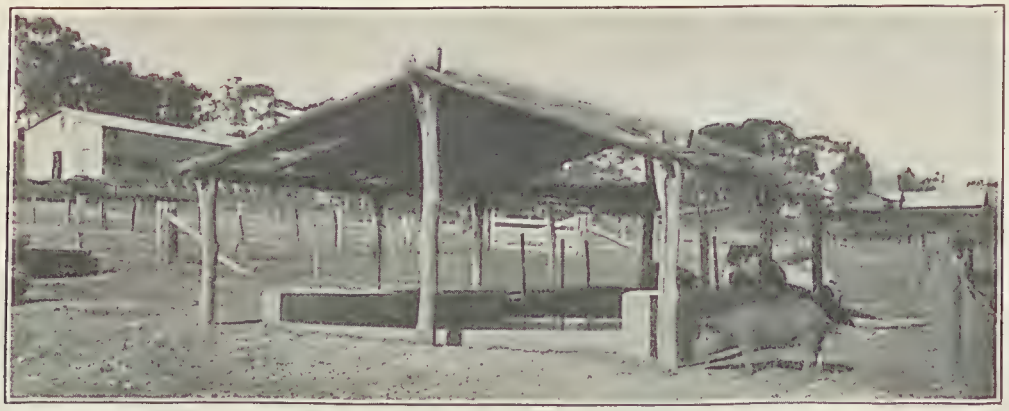
3. Influence of time of calving on production of individual cows;

4. Possibility of producing choicest cream, even throughout the summer months; and

5. Value of Friesians as beef cattle—fattening of steers.

From results obtained, it would appear that dairying is worthy of consideration, at least as a side-line, in this district. However, owing to the low prices prevailing at present, strict attention to efficiency of management is necessary in order that satisfactory results may be obtained. Experience with fodders indicates that good quality pasture hay should form a large portion of the ration of dairy cows.

The use of bulk-handling equipment has enabled the cost of production of pasture hay to be lowered to approximately 17s. 6d. per ton in the stack, including 7s. 6d. per ton as the estimated cost of growing the crop. In flush seasons, however, much pasture would finally be wasted if it were not conserved as hay or silage. Chaffed silage made from oats grown on stubble land costs approximately 15s. per ton in the overhead silo. This cost is a good deal less than is commonly supposed, and it appears that silage could be economically used by those who have the facilities for its production. Cows here have shown a marked response to small changes in conditions of feeding, and to obtain a reasonably



Concrete pig wallow with straw shelter.

steady production throughout the lactation, close attention must be paid to supplying the requisite feed to supplement the variable grazing available.

Experience has shown that cows calving in early autumn produce most economically, as pasture then forms the bulk of the ration. A large proportion of the cows, therefore, is brought into milk in the autumn, but from a management point of view it is necessary to distribute the lactations to some extent throughout the year. Over a period of many years, almost without exception, it has been possible to produce choicest cream throughout the whole year.

Owing to the low price of beef, few bull calves have been reared recently, sheep having given more economical returns.

PIGS.

Approximately 130 pigs are kept, and these have proved profitable in making use of grain grown on the farm and skim milk. It has been possible over many years to make greater profits by feeding wheat (especially cracked or second-grade grain) than by selling it at f.a.q. price. A progress report of this work was published in the *Journal of Agriculture*, January, 1931. Under recent price conditions of milk products and pigs, the return from cows has been increased by about 30 per cent. by utilizing skim milk as pig feed.

Practically all feeding is done by means of self-feeders, combined with grazing. It has been found that, for the greater part of the year, little supplementary feeding of pregnant sows is necessary when good pasture is available. All stores are raised on the farm, the number of breeding sows having been increased to sixteen. The sows are Middle Yorkshire, and Middle Yorkshire-Large Yorkshire cross, while a Large Yorkshire boar is used. By judicious selection of breeding stock, and by close attention to feeding, it has been possible to raise an excellent type of pig for either pork or bacon purposes. Recent prices have been very satisfactory, and the raising of pigs should prove a profitable side-line on most farms, especially where skim-milk is available.

CEREALS.

Large areas of wheat and oats are sown in the Rutherglen and neighbouring districts, and good yields usually are obtained. Since the inception of the Rutherglen Experiment Farm the various methods by which average yields can be economically increased have been investigated. A summary of the principal experiments carried out is given below.

Variety Tests of Wheat and Oats.

These comprised three sections:—

(*a*) *Variety Observation Plots* (Fields Nos. 14 and 3).—These plots are 1-100th acre in area, every fifth variety being a check plot of the variety Free Gallipoli for wheat and Algerian for oats. The object of these plots is to observe the behaviour of new varieties under Rutherglen conditions. The produce of the plots is used to sow the larger variety tests. Each year seed for these plots is obtained from the State Research Farm, Werribee, so that uniformity of type of the various varieties grown by the Department may be maintained.

(*b*) *Variety Plots* (*No.* 3 *Field*).—The new crossbreds which show promise in the observation plots, and other standard and introduced varieties are compared by the most accurate method available (a randomized block system).

(*c*) Those varieties that warrant it are later given further trial to test their suitability for both early and late seeding, and for different types of soil.

Results of Variety Trials.

Wheat.

Very few of the varieties grown in the North-Eastern district as recently as ten years ago are now sown there. Since 1912, variety tests have been conducted at the Rutherglen Experiment Farm and, as a result, new and more prolific wheats have been made available, and have replaced the less suitable types formerly grown. By 1928, Free Gallipoli had become the standard variety, but it is now being replaced to a large extent by Ghurka. Several other new varieties show great promise, but need further trial before they can be recommended.

A plot of Ghurka, the leading wheat variety.

Ghurka.—The most important feature of the results from these trials is the superiority of the Ghurka variety. Though bred at the Werribee Research Farm, it was at Rutherglen that its particularly high-yielding capacity was discovered. During the past six years, it has given consistently high yields, exceeding those of all other varieties, including the popular Victorian wheat, Free Gallipoli, by more than 3 bushels per acre. In more recent years, its suitability for many other districts has been demonstrated. Ghurka is a type of wheat that makes rapid early growth, but is a fairly late maturing variety, and very short in the straw. The latter characteristic may make it difficult to harvest where tall-growing weeds are prevalent and on such areas Free Gallipoli, Turvey, or Waratah is preferred. In addition to its prolificacy under general conditions, Ghurka has the additional advantage of being highly resistant to the Flag Smut disease, and is not so susceptible as Free Gallipoli or Ranee 4H to the occasional but regular attacks of rust which occur in this district. Ghurka produces flour superior to that from Free Gallipoli, and is therefore superior to it from almost every viewpoint. It is now the most popular variety in Victoria.

The other varieties grown to any extent in the district are Free Gallipoli, Waratah, and Ranee 4H. Amongst the varieties displaced by the evolution of more prolific wheats are Federation, Yandilla King, Nizam, Major, Turvey, Marshall's No. 3, Nabawa, Currawa, Rajah, Bena, Sepoy, and Penny.

The following table gives the average yields for five years of Ghurka compared with the wheats that were standard varieties at the beginning of the tests :—

Variety.	Average yields five years (replicated trials).
Ghurka	25·4 bushels per acre.
Free Gallipoli ..	21·6 ,, ,,
Major	21·7 ,, ,,
Turvey	20·4 ,, ,,

The search for still further improved varieties is being continued, and amongst those now under test are Baldmin, Dundee, Baringa, Ranee 4H, and many promising new cross-breds. Close attention is being given to the maintenance of maximum quality of the grain consistent with prolificacy.

Seed Wheat for Distribution, 1937.

Pure pedigreed graded seed wheat of the following varieties will be available for distribution in 1937. Applications for limited quantitis should be forwarded to the Manager or to the Department of Agriculture, Melbourne, by the 1st February :—

Wheat.—Ghurka, Free Gallipoli.

Oat Variety Trials.

Fields Nos. 3–14.

The North-Eastern district is suitable for oat growing, either for hay or for grain production, and a considerable area is sown annually, chiefly with Algerian, a late-maturing variety.

In recent years, the advantages of earlier varieties for sowing on a portion of the area devoted to oats have been recognized. In seasons with dry springs, or in very wet winters these earlier varieties have been found to give higher yields than the standard Algerian variety.

In those parts of the district where grazing is practicable, oats are frequently sown to supply

winter forage, and for this purpose the use of an early variety is desirable.

The tests provide for the measurement of both hay and grain yields.

During the past five years, Lachlan, which matures earlier than Algerian, but not so early as Mulga, has given the highest hay yield, and also has out-yielded Algerian in regard to grain. In recent years, a new variety, Dawn, has shown great promise. In grain yield alone, the short-strawed variety, Palestine, heads the list in the trials sown on fallowed ground, but Algerian is superior on stubble land, whether harvested for grain or as hay.

RESULTS OF OAT TRIALS.

Hay Yields.

Variety.	Average Yields in Cwt. per Acre.	
	On Fallow. Five Years.	On Stubble. Two Years.
Lachlan	47·4	43·5
Wild Oat x Ruakura ..	45·6	51·1
Mulga	40·3	43·0
Algerian	40·1	52·0
Dawn (Sunrise Selection) ..	..	45·2

Grain Yields.

Variety.	Average Yields in Bushels per Acre.	
	On Fallow. Five Years.	On Stubble. Two Years.
Palestine	44·2	34·1
Wild Oat x Ruakura ..	42·8	37·2
Lachlan	40·5	36·2
Algerian	36·8	39·2
Mulga	..	35·9
Dawn	..	35·5

Several new cross-bred oats and selections are included in the tests and some of these show considerable promise, particularly a new early selection of Algerian, known as P.4

Permanent Rotation Trials.

No. 1 FIELD.

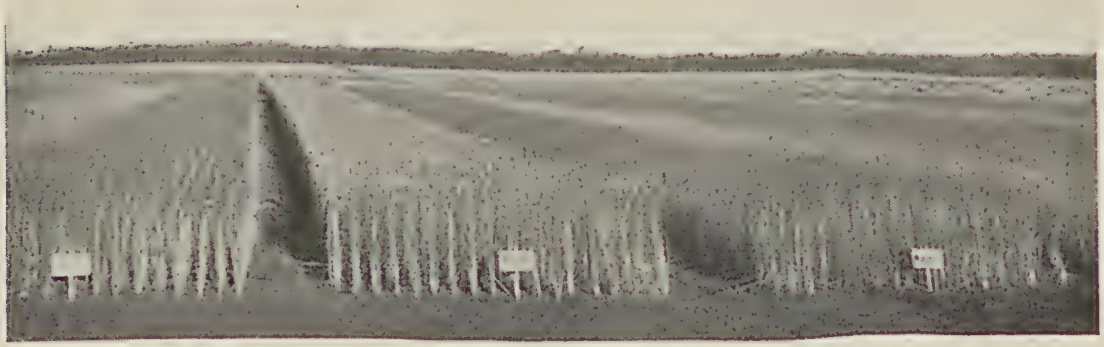
The object of the tests in this field is to determine the most profitable system of farming under conditions similar to those at Rutherglen. Eleven crop sequences, comprising 30 plots, are included in these tests, and in all of them wheat is the principal revenue-producing crop. An important part of the work is the series of plots designed to determine whether, under changed conditions at Rutherglen, the customary bare fallow can be replaced by a forage crop. The amount of grazing provided and any gain or loss in live weight of the sheep are recorded.

The average yield of the wheat crop grown in each rotation system is given below.

ROTATION TRIALS.

Plots—Three-eighths acre.

Rotation No.	Rotation System.	Average Wheat Yield for Nineteen Years. Bushels per Acre.
1	Fallow—wheat	22·6
2	Peas—wheat	22·1
3	Rape—wheat	23·4
4	Rape—peas—wheat ..	22·6
5	Rape—barley—peas—wheat ..	22·9
6	Rye and vetches—wheat ..	17·4
7	Wheat continuously ..	6·7
8	Sorghum (Sudan grass)—wheat	18·0
9	Pasture—fallow—wheat ..	19·8
10	Sorghum (Sudan grass)—peas—barley—fallow—wheat	20·7
11	Oats—pasture—fallow—wheat	22·2



Wheat Variety Trials.

From such an experiment, in which in some instances the cycle is not completed under five years, quick results cannot be expected. Nevertheless, some striking differences in growth are to be observed in the field, and in some instances the yield of wheat has already been shown to have been affected by the rotation practised. Land that has been continuously cropped to wheat, for instance, has produced an average yield of only 6.7 bushels, or about one-third of that obtained when the wheat crop has followed a bare-fallow. The substitution of a summer forage crop, Sudan grass, for the bare fallow has reduced the wheat yield by 4.6 bushels per acre.

Where rye and vetches have been alternated with wheat, there has been a notable reduction in yield. In this case the reduction is partly due to the fact that take-all affects both crops in this rotation.

When either of the forages, peas or rape, is sown in the autumn, and fed off during the winter and early spring, and the land immediately fallowed, the yield of wheat grown on this fallow apparently is not reduced. This result conforms with that obtained at the State Research Farm, Werribee. However, neither of these forages can be recommended for Rutherglen conditions, as they do not furnish satisfactory grazing returns here.

In 1936, the green forages were sown in mid-May, and fed off during the winter and spring. The land will next be ploughed in preparation for the following wheat crop in 1937.

Feeding-Off and Green Manurial Tests.

No. 2 Field.

The objects of these tests are—

1. To determine whether the customary fallow for wheat can profitably be replaced by a forage crop.

2. To investigate the most economical method of restoring humus to worn-out wheat soils.

This may be done by growing forages, and then either—

(*a*) Feeding them off with sheep; or

(*b*) Ploughing them under as green manure.

Outline of Experiment.—The forages under test are rape, barley, peas, rye, and vetches. In the first series, each forage crop is sown in the autumn, and fed off with sheep during the winter and early spring, and the plot immediately fallowed. Wheat for grain is sown in the following autumn on this late fallow. Wheat is grown also after bare fallow for the purpose of comparison.

In the second series of plots the treatment is identical with the above, except that the forages are ploughed in as green manure instead of being fed off.

The number of sheep grazed on each plot, and their gain or loss in weight, are recorded. The plots are each one-fifth of an acre in area.

In 1921, the wheat plots were halved, one-half being sown with wheat and the other with oats. The effect of ploughing in and feeding off green forage crops on a following oat crop will thus be determined.

Results of Feeding-Off and Green Manurial Tests.

Yields obtained with wheat grown after bare fallow and in rotation with forages fed off to sheep, and also with the same forages ploughed under (average for seventeen years):—

Rotation.	Average Wheat Yield for Seventeen Years.	Residual Test, 1932.
	Bushels per Acre.	
Series 1—		
Wheat after rape—fed off ..	18·7	18·4
Wheat after barley—fed off ..	14·5	15·4
Wheat after peas—fed off ..	18·2	12·1
Wheat after rye and vetches—fed off	18·9	15·8
Wheat after bare fallow ..	18·9	17·4
Series 2—		
Wheat after rape—ploughed in ..	17·8	14·6
Wheat after barley—ploughed in	11·9	8·7
Wheat after peas—ploughed in ..	16·9	10·4
Wheat after rye and vetches—ploughed in	18·3	14·8
Wheat after bare fallow ..	18·8	14·4

The test is confirmatory to that made in the rotation field in showing that after rape and peas are fed off to sheep under Rutherglen conditions, the yield of wheat is quite as satisfactory as where the wheat is grown after bare fallow. Unfortunately, both rape and peas have not proved economical to grow at Rutherglen, hence cannot be recommended for similar soils in the district. The tests confirm those at the State Research Farm, Werribee, in showing that, if barley is used as a forage crop in this way, material reduction in the yield of subsequent wheat crops is likely.

One outstanding result of the test has been the failure of any of the forage crops when ploughed in to increase the yield of wheat. The unsatisfactory effect of barley when used as a green

Scarifying the fallow.

manure preceding wheat will also be noticed. The result undoubtedly is due to the presence of take-all disease in the barley and its transference into the wheat crop.

In order to ascertain whether the cumulative effect of the green crops on the soil is being masked by the green crop depleting the soil of moisture and thus limiting the growth of wheat, the two series of plots in this field were left in fallow during 1930 and 1931, instead of being sown to green crops, as usual. Unfortunately, the wheat crops grown in 1931 were so badly waterlogged that the yields obtained gave no indication of the gain or loss in fertility.

The yields obtained in 1932 indicate that in no plot was the yield of wheat increased materially by either feeding off or ploughing in forage crops in alternate seasons since 1912. It appears that, under Rutherglen conditions, the application of the principles of green manuring as a means of increasing soil fertility is unprofitable. In addition, the forage crops tried have proved unsatisfactory.

The trials will be continued as, in future years, it will be important to know whether continual cultivation of the land in the wheat-fallow rotation depletes the soil of its fertility and, if so, whether the fertility may be maintained by any of the methods included in the test.

Another set of plots has been added to this field for the purpose of investigating the value of oats for grazing purposes and soil renovation.

Manurial Trials, Wheat and Oats.

No. 1 Field.

Twenty wheat and twenty oat plots are embraced in this section. The plots, 1-10th acre each, are sown on land alternately under crop and bare-fallow, and the site of each plot is permanent. In respect to all other factors, such as cultivation, seeding, &c., the plots are treated as uniformly as possible. This season oats were sown on 1st May, with 70 lb. seed, and wheat on 13th May, with 75 lb. seed per acre.

The results from this section, showing the average yields of wheat for nineteen years, and of oats for ten years, are set out in the following table:—

Manurial Trials, Wheat and Oats.

Free Gallipoli wheat and Algerian oats are the varieties used.

Manure Applied per Acre (on fallow land).	Wheat—Average Yields for Nineteen Years.	Oats—Average Yields for Ten Years.
	Bushels per acre.	Bushels per acre.
Farmyard manure, 10 tons ..	20·5	37·3
Farmyard manure, 10 tons + lime, 10 cwt.	21·7	40·6
No manure	11·5	23·8
Super., ½ cwt.	20·4	38·9
Super., 2 cwt.	22·3	41·4
Super., 1 cwt.	21·2	42·6
Super., 1 cwt. + nitrate of soda, ½ cwt. (with seed)	24·2	43·8
Super., 1 cwt. + nitrate of soda, ½ cwt. (in spring)	22·8	44·7
Super., 1 cwt. + sulphate of ammonia, 44 lb.	23·1	44·3
Super., 1 cwt. + sulphate of ammonia, 44 lb. + sulphate of potash, ½ cwt.	21·1	44·8
No manure	11·7	25·4
Bone Fertilizer, 1 cwt.	19·9	39·7
Basic Slag, 1 cwt.	20·9	37·4
Basic Slag, ½ cwt. + super., ½ cwt.	21·4	42·7
Super., 1 cwt.	21·0	40·0
Super., 1 cwt. + lime, 5 cwt. ..	23·4	43·7
Super., 1 cwt. + lime, 10 cwt. ..	23·1	40·7
Super., 1 cwt. + lime, 20 cwt. ..	24·0	43·1
No manure	11·5	22·2
Super., 1 cwt. + sulphate of potash, ½ cwt.	21·6	40·1

Note.—Stable manure and lime applied, 1933. Last previous dressing, 1923.

The application of superphosphate has given the most profitable results for wheat. The use of other manures, such as nitrate of soda, &c.,

EXTRA RETURN DUE TO USE OF SUPERPHOSPHATE.

Manure Applied per Acre.	Yield—Bushels per Acre.	Increase over No Manure. Bushels per Acre.	Value of Increase at 3s. 6d. per Bushel.	Cost of Manure at 42s. 6d. cwt.	Extra Return per Acre due to use of Manure.
			s. d.	s. d.	s. d.
Wheat.—Nineteen years' average.					
No manure	11·5	..	..	..	..
Super., ½ cwt.	20·4	8·9	31 2	2 3	28 11
Super., 1 cwt.	21·2	9·7	33 11	4 6	29 5
Super., 2 cwt.	22·3	10·8	37 10	9 0	28 10
Oats.—Ten years' average.					
			at 2s. 3d. bus.		
No manure	23·8	..	..	..	..
Super., ½ cwt.	38·9	15·1	34 0	2 3	31 9
Super., 1 cwt.	42·6	18·8	42 4	4 6	37 10
Super., 2 cwt.	41·4	17·6	39 7	9 0	30 7

in conjunction with superphosphate, apparently has given increases, but such increases have not been sufficient to justify the additional expense incurred. The yields from the plots treated with varying quantities of superphosphate indicate that, with wheat, the extra return due to the use of 1 cwt. per acre of superphosphate is little more than that obtained from ½ cwt. per acre, and ¾ cwt. per acre is recommended as a suitable application for use in the Rutherglen district under present conditions. When wheat prices are at a higher level, greater quantities of superphosphate may be used to advantage.

The trials showed also that oats sown on fallow gave a greater response to manuring than did wheat. The table above shows the profit resulting from the use of the several dressings with wheat and oats on fallow land.

Nitrogenous Manures.

(*a*) WITH WHEAT.

For nineteen years, the effect of applications of the nitrogenous manures, sulphate of ammonia, and nitrate of soda, in conjunction with superphosphate, has been measured in the permanent manurial field.

In four of these years, namely, 1922, 1923, 1927, and 1928, the yields of wheat were considerably increased, due to these manures. In the remaining fifteen years, however, no definite increases were obtained. The average figures, as shown on the previous page, indicate that the application of nitrogenous manures to wheat on fallow has been unprofitable at Rutherglen, where the soil is a grey cemenly loam and the average annual rainfall 22·8 inches.

In order to study more completely the action of nitrogenous manures, particularly sulphate of ammonia, replicated trials with wheat sown on both fallow and stubble ground have been carried out since 1929.

In all cases the nitrogenous manure used, sulphate of ammonia, was applied at the time of sowing.

The results of these experiments to date do not indicate that a profitable response from the use of nitrogenous manures, either on fallow or stubble ground, can be expected in the Rutherglen district with wheat.

Results of Nitrogenous Manure Trials, 1929–32

Manure Applied per Acre.	Wheat—Yield in Bushels per Acre.	
	Fallow.	Stubble.
Super., 1 cwt.	31·6	26·2
Super., 1 cwt., plus Sulphate of Ammonia, ¼ cwt.	29·2	27·1
Super., 1 cwt., plus Sulphate of Ammonia, ½ cwt.	30·2	27·5
Super., 1 cwt., plus Sulphate of Ammonia, 1 cwt.	28·9	26·3
Sulphate of Ammonia (alone), ½ cwt.	21·0	19·0
No manure	20·7	19·9

(*b*) WITH OATS.

A manurial trial with oats for hay on stubble was commenced in 1935, and the results obtained in that year indicate that a profitable increase in yield may be obtained by the use of sulphate of ammonia in addition to super. on the stubble

oat crop. Further trials are necessary to confirm the results.

Oat Manurial Trial on Stubble 1935.

Manure Applied per Acre.	Hay—Yield in Cwt. per Acre.
No Manure	35·3
Super. ½ cwt.	36·9
Super. 1 cwt.	37·4
Super. 1½ cwt.	36·7
Super. ½ cwt. and Sulphate of Ammonia ½ cwt.	51·7
Super. 1 cwt. and Sulphate of Ammonia ½ cwt.	50·3
Super. 1 cwt. and Sulphate of Ammonia 1 cwt.	65·6

CULTIVATION TESTS.

These comprise twelve plots each 1-5th acre in area.

The object of the tests is to compare the yields of wheat sown on a series of plots tilled in various ways. A depth of ploughing test is included. Plots were sown on 12th May with 1 cwt. superphosphate and 75 lb. seed per acre.

The average yields of wheat from the plots for twenty-one years are as under:—

CULTIVATION TESTS, WHEAT.

Average Results for Twenty-one Years.

Treatment of Plot.	Yield per Acre.
	Bushels.
Ploughed 3″ July, and well worked ..	21·3
Ploughed 5″ July, and well worked ..	25·5
Ploughed 7″ July, and well worked ..	26·8
Ploughed 9″ July, and well worked ..	25·1
*Ploughed 3″ July, subsoiled, and well worked	23·3
*Ploughed 5″ July, subsoiled, and well worked	24·6
*Ploughed 7″ July, subsoiled, and well worked	25·3
Ploughed 5″ July, and well worked ..	24·2
Ploughed 5″ July, and neglected (grazed only)	16·2
Ploughed 5″ October, and well worked ..	20·3
Ploughed 5″ October, and neglected (grazed only)	18·5
Ploughed 5″ just before seeding (non fallow)	13·0

* Not subsoiled since 1923.

Plots sown with Free Gallipoli wheat 75 lb. per acre, superphosphate 1 cwt. per acre.

All the plots are grazed with sheep when necessary, in order to check weeds.

It is apparent that shallow ploughing, practised so successfully for fallowing in some wheat districts, is not advisable under the conditions at Rutherglen. The yields show an improvement as the depth of ploughing increases from 3 inches to 7 inches; beyond that depth, 9-in. ploughing, a decrease is evident. Subsoiling has had no appreciable influence on the yields, and the results are in agreement with those from the depth of ploughing section. Despite the subsoiling, the deeper ploughing still shows a beneficial influence on the crop. The yields from the early and late fallowed, cultivated and non-cultivated, and non-fallow plots, afford interesting comparisons, and demonstrate convincingly the superiority of the early and well-worked fallow.

Research into Fallowing Methods.

No. 12 FIELD, GLASSHOUSE AND LABORATORY.

This investigation is designed to determine the extent to which soil moisture and plant foods are affected by various cultivation methods. The soil conditions from the time of ploughing to the harvesting of the crop are being studied in detail by chemical and physical methods. The scientific results obtained to date indicate that, in fallow cultivation, weed control is of prime importance. They confirm also the great value of sheep in the economic preparation and maintenance of a clean fallow.

Rate and Time of Seeding Trials.

No. 14 FIELD.

The average result of these trials with wheat indicate that maximum yields are obtained by sowing before mid-May with at least 75 lb. of seed per acre. Sowing after this time involves a much greater risk than does early sowing under Rutherglen conditions.

AVERAGE RESULTS (Seed 75 lb. per Acre).

	Bushels per acre.
Early sowing (late April)	30.8
Normal sowing (early May) ..	30.2
Late sowing (late May-early June)	26.9

Wheat Pickling Trials.

No. 1 FIELD.

These plots were part of an extensive series of pickling experiments conducted by the Department at Rutherglen, Longerenong, and Werribee.

The object of the tests was to compare the results obtained with the different pickling methods used for the control of ball smut, and also to determine the relative efficiency of the various commercial dry-pickling powders.

It is usually found that dry-pickled seed germinates and grows more quickly than does seed treated with bluestone or formalin. This advantage is particularly important when germination

conditions are unfavorable, as its common with the later sowings at Rutherglen.

YIELD TRIALS (Sown early June).

Seed Treatment.	Average yield, 5 years. Bushels per acre.
Dry pickled, 2 oz. per bushel ..	26.8
Formalin, 1-450 (3 minutes' immersion)	23.8
Bluestone, 1¼ per cent. (3 minutes' immersion)	22.4

Each of the treatments used proved satisfactory in controlling the smut.

Oat Pickling Trials.

No. 1 FIELD.

In 1929, the oats in the Rutherglen district were severely affected by head smuts, up to 35 per cent. infection being recorded. Experiments conducted in the same year showed that the dry-pickling method, now generally used to control ball smut in wheat, is a satisfactory, though not a perfect, method for the control of oat smut also.

Confirmatory experiments have been carried out since 1929, and it has been definitely shown that the disease may be controlled by the use of dry pickles. Although few farmers pickle their seed oats, it is advisable that this should be done unless the crop from which the seed was obtained was perfectly free from smut.

Flag Smut Investigation.

Flag Smut is a serious disease affecting wheat crops throughout Victoria, particularly in certain parts of the Goulburn Valley. The Department of Agriculture has conducted experiments during the past five years at the Rutherglen Experiment Farm and elsewhere in an endeavour to discover methods for the control of the disease. The most efficient methods are the use of resistant varieties, together with good cultivation and rotation practices.

The commonly grown wheat varieties have been classified according to their comparative resistance to Flag Smut, as follows :—

RESISTANT—Nabawa, Ghurka.

MODERATELY RESISTANT—Currawa.

SUSCEPTIBLE—Sepoy, Rajah, Rance 4H, Nizam.

VERY SUSCEPTIBLE—Waratah, Mogul, Major, Turvey, Free Gallipoli, Bena, Federation.

As Ghurka is a prolific variety and, in addition, is resistant to Flag Smut, its use on areas known to be infected with this disease is recommended. Nabawa is not a particularly suitable variety for use in Victoria.

Tubercle Free Herds

The following herds have been declared free of tuberculosis under the scheme conducted by the Department of Agriculture. Under this scheme a tuberculosis-free accredited herd of cattle is one in which the entire herd has passed two negative, successive, annual physical examinations and tuberculin tests, or, upon disclosure of infection, three semi-annual, successive physical examinations and tuberculin tests applied by a State Veterinarian or by a qualified and registered veterinarian who is approved by the Chief Veterinary Inspector for that purpose.

ACCREDITED TUBERCLE FREE HERDS.

Herd Number.	Name.	Address.	No. in Herd.	Herd Number.	Name.	Address.	No. in Herd.
1	State Research Farm	Werribee ..	259	6	Lady Talbot Milk Supply Company	Cranbourne ..	418
2	Warragul High School	Warragul ..	35				
3	Payne, A. E. T. ..	"Yarra View," Lilydale	80	7	Mailer, Dr. Ramsay ..	"Maneroo," Shepparton	92
4	Dennis, Mrs. A. A. ..	Frankston ..	14	8	Reid, Ralph G. ..	"Holmwood," Koo-wee-rup	99
5	Slaney, H. B. ..	Mornington ..	85				

The utilization of pasture to best advantage requires attention and investigation to the same extent as pasture improvement itself, the object being to obtain the maximum net return per acre over a number of years consistent with the maintenance of the numbers and health of stock. The importance of quality of meat in both the export and local markets is generally appreciated, but quality should be considered in relation to the quantity produced.

On improved topdressed pastures in districts enjoying a 20 to 30 inch annual rainfall, the production of export lambs has become more profitable than woolgrowing alone and is now the predominant form of sheep-raising in many districts of Victoria. At the Rutherglen Experiment Farm, it has proved practicable to carry, for the period May to November, 2¼ large-framed ewes and their lambs per acre of improved pasture (including subterranean clover). Sufficient feed remains to carry the ewes and unsold lambs through from December to April. In addition, it has been possible, in some seasons, to conserve considerable quantities of pasture hay and silage.

Heavier stocking would have resulted in poorer fattening of lambs, less wool per ewe, or the necessity for heavy hand feeding in some seasons, while lighter stocking would have given larger lambs, a minimum of reject or carry-over lambs, but a smaller possible output.

Decisions as to intensity of stocking must always remain to a great extent questions of judgment. The choice of the most suitable sheep to employ is also a difficult one, for all breeds of ewes and rams have their advantages, at least in certain districts and for specific conditions. Also the most desirable types are not always available at a reasonable price.

Although no complete statistics are available, it is known that less than half the lamb carcasses exported from Victoria are graded as first quality, principally for the reason that the diverse seasonal and pasture conditions in Victoria and the Riverina do not make it possible for all lambs to be first quality. It must be remembered also that a definite demand exists for second grade meat. All authorities agree, however, that the standard can and should be improved and the influence of breed and types of both ewes and rams in this regard is recognized as an important factor.

The two most popular of the English breeds as sires of fat lambs are the Border Leicester and the Southdown, the latter having achieved considerable fame as the sire of the choicest lamb obtainable. Under the favorable climatic and pastoral conditions of New Zealand, the use of Southdown rams and large crossbred ewes has been a big factor in the maintenance of a superior standard of export lamb. In Victoria, many

breeders are now using similar methods, and the best Victorian "Down" lambs are said to be equal to those from New Zealand. Many other breeds have their adherents also, but figures giving direct comparisons of their relative values under identical conditions in Victoria have not hitherto been available.

Investigations at Rutherglen.

To compare the relative value of a limited number of various crosses for fat lamb production under heavy stocking conditions, investigations were commenced at the Rutherglen Experiment Farm in 1932. Both half-bred (Romney Marsh-Merino cross) and large-framed comeback ewes were mated, to lamb in June, with typical rams of the Border Leicester, Southdown, Dorset Horn, and Ryeland breeds, at least three rams of each breed being obtained from leading stud flocks. The latter two breeds were included only from 1933 onwards, when new two-tooth ewes were purchased also.

Each year, the ewes and lambs of each cross were grazed together, except at mating and lambing time, and complete records were kept as to :—

1. *Export Lambs.*—Time of lambing; percentage dropped, marked and fattened; rate of maturity; live and dressed weights of exportable lambs; quality and grade of carcasses; skin weights and values, &c.

2. *Reject Lambs.*—Live and dressed weights at various stages until sold, lamb fleeces, hoggett fleeces, skin values, &c., particularly in 1933, the year of a special investigation of "carry over" lambs.

3. *Ewes.*—Wool weights and values, and values as fat ewes when aged.

As is usual under heavy stocking conditions with variable seasons, the lambs did better in some years than in others, being good in 1932 and 1935, fair in 1934, and poor in 1933 due to shortage of feed in the autumn and winter. In the latter year, the opportunity was taken to compare the value of each cross as "carry-over" lambs. In the other three seasons, all suitable lambs were slaughtered at the end of the spring in 1932 by the Amalgamated Freezing Co. (Vic.) Pty. Ltd., and in the following years by the Western and Murray Co-op. Co. Ltd., Melbourne.

Typical Border Leicester and Southdown flock rams.

Southdown-cross lamb (left) compared with Border Leicester-cross lamb.

Skins were valued by Wilcox Mofflin Ltd., and wool by Goldsbrough Mort and Co. Ltd.

Progress Results.

A full report of the investigations for five years will be published later, but the following comments on the results obtained may be of interest to lamb raisers. The method adopted in interpreting the results of this experiment has been to apply current values to the recorded performance of each cross in terms of weight, grade and class of skin or wool.

The manner in which this was done for the 1932 experiment is shown in the accompanying table in which the lambs from half-bred ewes by Border Leicester and Southdown rams are compared, the meat and skin values being those ruling in 1935.

In other years, similar results were obtained, e.g., in 1935, the relative values were Border

Cross.	Quality Grade.	Weight.	Number of Carcasses.	Average Frozen Weights.	Meat Value on Hooks Per Lb.	Averages of All Lambs.
				Lb.	*d.*	
Border Leicester Ram and Half-bred Ewe	Down ..	Heavy ..	..	..	6	
	Down ..	Light ..	..	..	6¼	Average dressed frozen weight 35·9 lb.
	First ..	Heavy ..	44	38·8	5¾	
	First ..	Light ..	26	33·5	6	Average value of carcasses .. .. *s.* 17 *d.* 3·1
	Second ..	Heavy ..	14	38·1	5½	Skin .. .. .. 5 4·75
	Second ..	Light ..	13	30·0	5¾	Fat .. .. .. ·5
	Third ..	..	2	25·5	5½	Average value all lambs 22 8·35
Southdown Ram and Half-bred Ewe	Down ..	Heavy ..	21	38·5	6	
	Down ..	Light ..	59	33·7	6¼	Average dressed frozen weight 33.7 lb.
	First ..	Heavy ..	1	37·1	5¾	
	First ..	Light ..	9	33·7	6	Average value of carcasses .. .. *s.* 16 *d.* 11·75
	Second ..	Heavy ..	..	..	5½	Skin .. .. .. 4 3·5
	Second ..	Light ..	23	29·6	5¾	Fat .. .. .. ·5
	Third ..	..	2	26·0	5½	Average value all lambs 21 3·75

Note.—Heavy lambs are those weighing more than 36 lb.

A premium of ¼d. per lb. was allowed for carcasses classed as "Downs". If a higher premium were obtainable, the Southdown cross would show to better advantage.

Leicester Cross, 22s. 2d.; Southdown Cross, 19s. 8·75d.

In this latter year not so great a percentage of the Southdown lambs were graded as "Down" carcasses, illustrating that Southdown cross lambs must be well finished to obtain the maximum premium for this type of carcass.

Summary.

The following is a summary of four years investigations (1932–35) carried out under the Rutherglen conditions as described, with 1,758 lambs:—

1. The average drop of lambs from half-bred and comeback ewes on improved pastures for five years was 95 per cent., there being no significant or consistent variation between crosses, either in single or twin lambs.

2. The percentage of lambs reared to ewes mated was 85 per cent.

3. The pastures carried 2¼ ewes and their lambs per acre, the average annual loss of ewes from all causes being 2 per cent.

4. Four breeds of rams, Border Leicester, Southdown, Dorset Horn, and Ryeland were mated with (*a*) Half-bred (Romney Marsh x Merino) and (*b*) Comeback ewes. Except for short periods, all sheep and lambs were grazed together, the flock moving from paddock to paddock.

5. The Border Leicester rams produced average lambs of heavier dressed weights than did the Southdowns.

6. The Southdown rams produced a larger percentage of first quality lambs than the Border Leicesters.

7. The Southdown lambs matured earlier, i.e., were prime at lower weights than the Border Leicester lambs, an important factor when early lambs are more valuable than mid-season lambs of equal weight or in districts where green pasture is short-lived or goes to seed early.

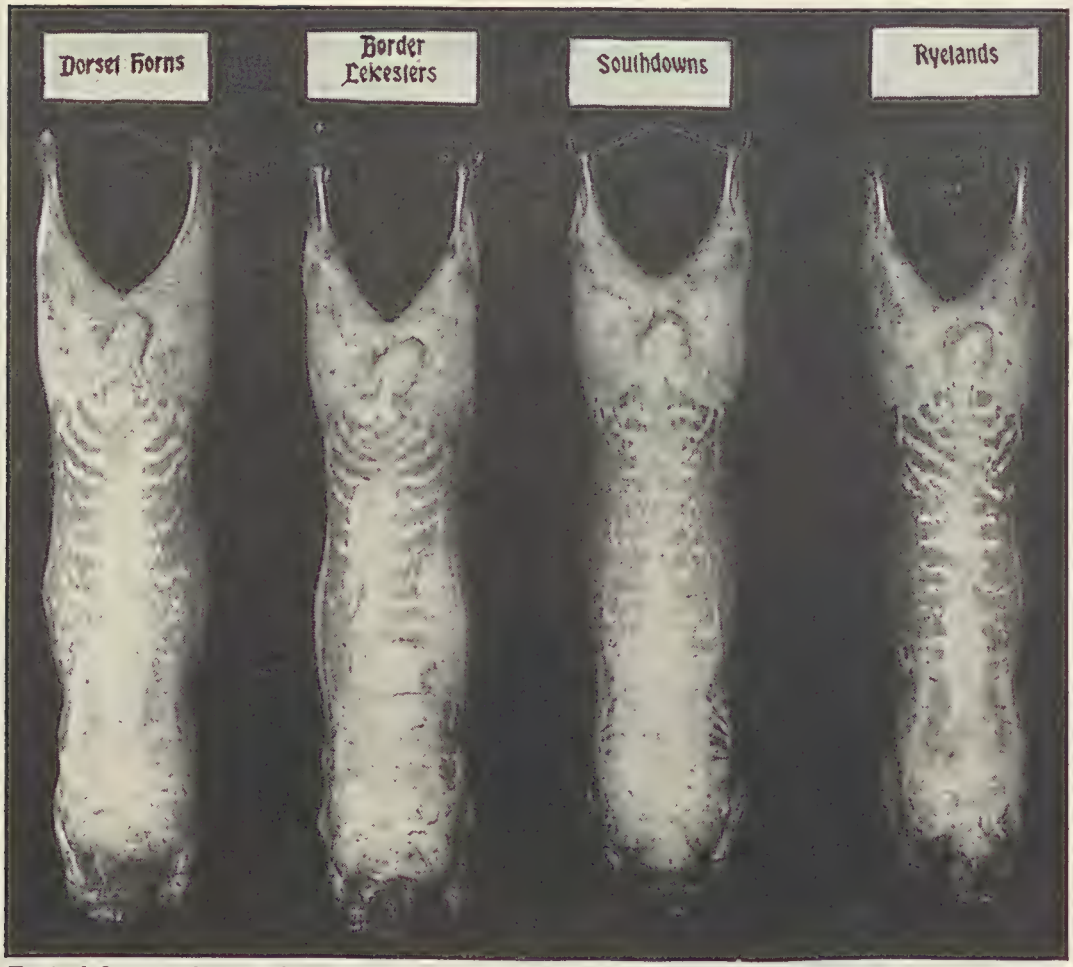
8. The skins of the Border Leicester cross lambs were valued at approximately 1s. each more than the Southdown skins.

9. On the basis of the 1935 values as shown, the Border Leicester cross lambs gave a greater return per head than the Southdown lambs.

10. The half-bred ewes were superior to the comeback ewes as mothers of export lambs, but this advantage was offset by the greater weight and value of the comeback ewe fleeces and probably also by the slightly more feed required by the larger-framed half-bred ewes.

11. The results with the Dorset Horn cross were inconclusive. They were not superior to

Half-bred ewes (Romney Marsh x Merino).



Typical first-quality lamb carcasses. Note the short thick legs and well-covered shoulders and loin of the Southdown lambs as compared with the longer bodied Border Leicester cross lamb. The Dorset Horn and Ryeland crosses are intermediate in type.

the Border Leicester crosses in their return as export lambs, but showed to advantage as old lambs in 1933.

12. The Ryeland cross as export lambs were inferior to the Southdown lambs under Rutherglen conditions.

13. As "carryover" or reject lambs, those of the Border Leicester and Dorset Horn crosses were more valuable than the Southdown and Ryeland crosses principally because of their size rather than different skin or wool values. Under conditions where considerable percentages of the drop are likely in some seasons to be unsuitable for export in the spring or before they are shorn, this feature is an important factor in the choice of ram.

Conclusion.

The experiments were carried out under normal farm conditions, stocking heavily as is necessary for maximum use of improved pastures. "Show" lambs were not sought, normal size lambs being obtained. The usual difficulties concurrent with variable seasons were experienced.

It is a matter for conjecture as to whether the Southdown crosses would have shown to better advantage with lighter stocking or intensive hand feeding at lean periods in two of the five seasons. By that means, a greater percentage of "Down" carcasses would have been obtained, but more first quality lambs of the other crosses would have resulted also.

As it is evident that an improvement in the quality of lambs is as dependent on supplementary feeding in lean periods as it is on breed, it is proposed to undertake an investigation of the economics of hand feeding in conjunction with the breed experiments.

Manurial Trials on Potatoes

Results for 1935-36

By J. T. Ramsay, Potato Expert.

WEATHER conditions during the past season were somewhat erratic. The early portion opened favorably and good growth was made during the late spring and early summer. A very dry spell in the middle of the season threatened disaster, but this was averted by satisfactory rains at flowering time. Although the average tonnage was reduced, particularly in the Central highlands, fairly good crops of fine quality were harvested.

BEECH FOREST.

At Beech Forest the weights of marketable tubers harvested ranged from 3 tons 15 cwt. per. acre, in the case of "no manure", to 8 tons 1 cwt. The latter yield was obtained by the application of the heavy dressing of 9 cwt. superphosphate and 2 cwt. sulphate of ammonia per acre, and represented an increase of 115 per cent.

Since the introduction of the 2 cwt. rating of ammonium sulphate, Beech Forest is practically the only district which has consistently shown an appreciable and constant increase from the heavier application of nitrogenous fertilizer. In a season like the last, of course, it proved highly profitable.

TABLE I.—POTATO MANURIAL TESTS, BEECH FOREST, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 6 cwt. ..	4 11	0 16	21
Super., 9 cwt. ..	4 19	1 4	32
Super., 6 cwt. + amm. sulp., 1 cwt. ..	6 3	2 8	64
Super., 6 cwt. + amm. sulp., 2 cwt. ..	7 0	3 5	87
Super., 9 cwt. + amm. sulp., 1 cwt. ..	5 14	1 19	52
Super., 9 cwt. + amm. sulp., 2 cwt. ..	8 1	4 6	115
Super., 6 cwt. + amm. sulp., 1 cwt., pot. sulp., 1 cwt. ..	6 11	2 16	75
No manure	3 15	..	..

TABLE II.—AVERAGE RESULTS, BEECH FOREST, FOR FIVE YEARS, 1931–32 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 6 cwt.	5 13	42
Super., 9 cwt.	6 4	53
Super., 6 cwt. + amm. sulp., 1 cwt.	8 2	100
Super., 6 cwt. + amm. sulp., 2 cwt.	8 12	112
Super., 9 cwt. + amm. sulp., 1 cwt.	8 9	109
Super., 9 cwt. + amm. sulp., 2 cwt.	9 12	133
Super., 6 cwt. + amm. sulp., 1 cwt., pot. sulp., 1 cwt.	7 15	91
No manure	4 1	..

The soil on which these tests were conducted is a friable loam of good texture, which produced high quality potatoes of fine shape and appearance.

Details of the results for the season 1935–36 and the average yield obtained for the period of years over which the tests have been conducted, are shown in Tables I. and II. The weights of small potatoes have not been taken into account in any of these trials, the figures given being for marketable tubers only.

TRENTHAM.

Yields were rather light on the red volcanic soils at Trentham during the past season. This country does not retain moisture well, with the result that the crop suffered severely during the dry spell in January.

The soil on which the tests are carried out is typical of a large area in the Central highlands and it is considered that similar soils in this district can be reconditioned only by practising green manuring, i.e., by growing crops for the specific purpose of turning them under ground when green. Green manurial trials conducted at Millbrook indicate the value of this practice.

In the case of the heavier application of sulphate of ammonia the increase in yield has been calculated from the "no manure" yield during the same period.

During the nine years of these tests at Trentham the greatest economical return has been obtained with the "3 and 1" mixture, i.e., 3 cwt. superphosphate and 1 cwt. sulphate of ammonia per acre.

The yields for last year, and the average returns over the past nine years are set out in Tables III. and IV.

TABLE III.—POTATO MANURIAL TESTS, TRENTHAM EAST, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	3 2	1 2	55
Super., 3 cwt. ..	3 5	1 5	62
Super., 4 cwt. ..	3 5	1 5	62
No manure	2 0	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	3 10	1 10	75
Super., 3 cwt. + sulp. amm., 2 cwt. ..	4 10	2 10	125

TABLE IV.—AVERAGE RESULTS, TRENTHAM EAST, FOR NINE YEARS, 1927–28 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	4 13	58
Super., 3 cwt.	5 8	83
Super., 4 cwt.	5 5	78
No manure	2 19	..
Super., 3 cwt. + sulp. amm., 1 cwt.	6 3	108
Super., 3 cwt. + sulp. amm., 2 cwt.	6 9	126*

* 4 years only.

WHEATSHEAF.

In spite of the dry weather conditions and lower yields experienced on the red volcanic soil at Wheatsheaf, the value of judicious manuring was again demonstrated. The "3 and 2" mixture shows to the best advantage with a 50 per cent. increase over "no manure".

During the eight-year period of the tests, however, the average increase from the "3 and 1" mixture has been 73 per cent., which is both substantial and profitable.

Details of the returns are shown in Tables V. and VI.

TABLE V.—POTATO MANURIAL TESTS, WHEATSHEAF, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	4 0	0 13	19
Super., 3 cwt. ..	4 2	0 15	22
Super., 4 cwt. ..	4 2	0 15	22
No manure	3 7	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	4 10	1 3	34
Super., 3 cwt. + sulp. amm., 2 cwt. ..	5 0	1 13	50

TABLE VI.—AVERAGE RESULTS, WHEATSHEAF, FOR EIGHT YEARS, 1928–29 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	4 13	34
Super., 3 cwt.	4 18	40
Super., 4 cwt.	5 1	44
No manure	3 10	..
Super., 3 cwt. + sulp. amm., 1 cwt.	6 1	73
Super., 3 cwt. + sulp. amm., 2 cwt.	6 13	71*

* 4 years only.

ROMSEY.

The Romsey district once again has given the least response to artificial fertilisers. This may be explained, to some extent, by a lack of humus in this volcanic area, Romsey being one of the oldest farmed districts in Victoria. It is intended to conduct green manurial trials on this soil in an attempt to improve its condition.

During the past season, the dressing of 3 cwt. super. and 2 cwt. sulphate of ammonia showed the greatest return (79 per cent.). For an eight-year period the "3 and 1" application has averaged a 36 per cent. increase, while for a period of four years, the "3 and 2" mixture has increased the yield by 48 per cent. It would appear from the figures shown in Table VIII. that there was some discrepancy but such is not the case. The average yield from the unmanured plots for the four-year period in which the extra dressing of sulphate of ammonia was applied, was less than that for the full period of the trials, i.e., nine years.

The results of the tests conducted at Romsey are shown in Tables VII. and VIII.

TABLE VII.—POTATO MANURIAL TESTS, ROMSEY, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	5 7	1 12	43
Super., 3 cwt. ..	5 7	1 12	43
Super., 4 cwt. ..	5 10	1 15	47
No manure	3 15	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	5 15	2 0	53
Super., 3 cwt. + sulp. amm., 2 cwt. ..	6 14	2 19	79

TABLE VIII.—AVERAGE RESULTS, ROMSEY, FOR NINE YEARS, 1927–28 TO 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	5 13	24
Super., 3 cwt.	6 1	33
Super., 4 cwt.	5 10	21
No manure	4 11	..
Super., 3 cwt. + sulp. amm., 1 cwt.	6 4	36
Super., 3 cwt. + sulp. amm., 2 cwt.	6 10	48*

* 4 years only.

MUSK.

Although of volcanic origin the soil at Musk differs from that of the other volcanic areas on which potato trials are carried out, being lighter in texture. The yields obtained last season were very light compared with other years. This was due mainly to the fact that the crops were severely affected with frost during the early part of March.

TABLE IX.—POTATO MANURIAL TESTS, MUSK, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	2 11	1 4	89
Super., 3 cwt. ..	2 14	1 7	100
Super., 4 cwt. ..	3 4	1 17	137
No manure	1 7	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	3 15	2 8	174
Super., 3 cwt. + sulp. amm., 2 cwt. ..	3 9	2 2	155

TABLE X.—AVERAGE RESULTS, MUSK, FOR EIGHT YEARS, 1928–29 TO 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	4 8	33
Super., 3 cwt.	4 15	44
Super., 4 cwt.	4 17	47
No manure	3 6	..
Super., 3 cwt. + sulp. amm., 1 cwt.	5 12	70
Super., 3 cwt. + sulp. amm., 2 cwt.	6 6	83*

* 4 years only.

The effect of the manures however, was still marked.

The "3 and 1" application again showed to best advantage during the season. This super. and ammonia combination has given most consistent results since its introduction. The returns obtained last season and the average results for the past eight years are shown in Tables IX. and X.

WARRAGUL.

The Warragul district retains the distinction of being the only centre in Victoria, at which manurial trials on potatoes are conducted, where improvement in yield is obtained from the use of potassium sulphate. Over a period of 10 years, the increased yield due to the use of 6 cwt.

TABLE XI.—POTATO MANURIAL TRIALS, WARRAGUL, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 4½ cwt.	5 11	1 5	29
Super., 6 cwt.	5 14	1 8	32
Super., 6 cwt. + pot. sulp., 1 cwt.	7 0	2 14	63
No manure	4 6	..	..
Super., 6 cwt. + pot. sulp., 2 cwt.	7 6	3 0	70
Super., 6 cwt. + sulp. amm., 1 cwt.	7 0	2 14	63
Super., 6 cwt. + pot. sulp., 1 cwt. + amm. sulp., 1 cwt.	7 6	3 0	70

super. and 1 cwt. potassium sulphate amounts to 98 per cent. compared with a 70 per cent. increase due to 6 cwt. super. alone over the same period. The addition of ammonium sulphate to this mixture apparently does not justify the cost.

Four years ago an additional 1 cwt. of potash was tested out with superphosphate but has not yet proved advantageous, while the original

TABLE XII.—AVERAGE RESULTS, WARRAGUL, FOR TEN YEARS, 1926–27 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 4½ cwt.	6 0	26*
Super., 6 cwt.	7 5	70
Super., 6 cwt. + pot. sulp., 1 cwt.	8 8	98
No manure	4 5	..
Super., 6 cwt. + pot. sulp., 2 cwt.	7 4	40†
Super., 6 cwt. + sulp. amm., 1 cwt.	8 0	88
Super., 6 cwt. + pot. sulp., 1 cwt. + amm. sulp., 1 cwt. ..	8 9	99

* Two years only. † Four years only.

dressing has resulted in an economic return under Warragul conditions.

The 3 cwt. per acre dressing of superphosphate was discarded last season as being insufficient. An application of 4½ cwt. super. was introduced two seasons ago, but it has not yet proved equal to the results obtained with 6 cwt. From the results obtained so far, the optimum supply of phosphoric acid for potato crops on Gippsland soils appears to be achieved with 6 cwt. superphosphate.

Details of returns are shown in Tables XI. and XII.

A cultivation and spacing test, on sections of the experimental area, was carried out at Warragul last season. The test supported similar results obtained at Millbrook over a period of years.

The figures obtained are as follow :—

Cultivation Test, Warragul, 1935–36.

	T. C.
Not cultivated ..	5 11
Cultivated once ..	7 9
Increase due to cultivation	1 18 = 34 per cent.

Brown Coal Dust.

Experiments have been carried out at Warragul with brown coal dust during the past three years. Results continue to be conflicting. Two applications, 6 tons and 12 tons per acre, have been made each year. In the 1934–35 season, a definite increase of between one and two tons per acre was obtained but no significant response was apparent in the first season of the tests or last season.

The cost of application is very high and potato-growers cannot consider brown coal dust an economic proposition at this stage.

The results obtained last season are shown in Table XIII.

TABLE XIII.—POTATO MANURIAL TRIALS, WARRAGUL, BROWN COAL DUST, 1935–36.

Manure per Acre.	Weight Marketable Tubers.		
	Manure only.	Brown Coal 12 tons.	Brown Coal 6 tons.
	T. C.	T. C.	T. C.
Super., 4½ cwt.	5 11	5 17	5 17
Super., 6 cwt.	5 14	6 0	5 17
Super., 6 cwt. + pot. sulp., 1 cwt.	7 0	7 3	7 3

KOROIT.

The Koroit plots suffered severely from the dry spell and consequently moderate yields only were harvested. In spite of this, however, the manured sections showed a marked improvement in yield compared with the untreated plots, as shown in Table XIV.

Over the period of the tests (eight years), the "3 and 1" mixture has given the most consistent increase in weight of market sized potatoes, although during last season it was inferior to other treatments.

The average results for the eight-year period of the trials are shown in Table XV.

TABLE XIV.—POTATO MANURIAL TESTS, KOROIT, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	3 8	0 17	34
Super., 3 cwt. ..	4 0	1 9	58
Super., 4 cwt. ..	4 3	1 12	64
No manure	2 10	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	3 6	0 15	30
Super., 3 cwt. + sulp. amm., 2 cwt. ..	3 3	0 12	24

TABLE XV.—AVERAGE RESULTS, KOROIT, FOR EIGHT YEARS, 1928–29 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	6 15	24
Super., 3 cwt.	6 19	27
Super., 4 cwt.	7 0	28
No manure	5 9	..
Super., 3 cwt. + sulp. amm., 1 cwt.	7 7	35
Super., 3 cwt. + sulp. amm., 2 cwt.	8 1	31*

* 3 years only.

TABLE XVI.—POTATO MANURIAL TRIALS, ILLOWA, 1935–36.

Manure per Acre.	Weight Marketable Tubers.	Increase due to Manure.	Percentage Increase.
	T. C.	T. C.	%
Super., 2 cwt. ..	4 0	1 0	33
Super., 3 cwt. ..	4 16	1 16	60
Super., 4 cwt. ..	4 10	1 10	50
No manure	3 0	..	..
Super., 3 cwt. + sulp. amm., 1 cwt. ..	4 16	1 16	60
Super., 3 cwt. + sulp. amm., 2 cwt. ..	4 16	1 16	60
Basic phosphate, 3 cwt.	3 11	0 11	18

ILLOWA.

The adverse seasonal conditions affected the yield of potatoes at Illowa during 1935-36. The benefits derived from the application of artificial fertilisers were still marked however, and ranged from 18 to 60 per cent.

The yields obtained during last season and the average yield over the eight years of the test are set out in Tables XVI. and XVII.

TABLE XVII.—AVERAGE RESULTS, ILLOWA, FOR EIGHT YEARS, 1928–29 TO 1935–36.

Manure per Acre.	Average Yield.	Percentage Increase.
	T. C.	%
Super., 2 cwt.	6 13	36
Super., 3 cwt.	7 6	49
Super., 4 cwt.	7 6	49
No manure	4 18	..
Super., 3 cwt. + amm. sulp., 1 cwt.	7 13	56
Super., 3 cwt. + amm. sulp., 2 cwt.	5 6	34*
Basic phosphate, 3 cwt. ..	6 0	22

* 3 years only.

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Agricultural Lime Act 1934.

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General Description.	Brand.	Calcium Oxide.	In the Form of—	Equivalent to Calcium Carbonate.	Magnesium Oxide.	In the Form of—	Degree of Fineness. Passing Through a 20-mesh Sieve.	Price per Ton in 11-ton Lots.*	Manufacturer.
		%		%	%		%	£ s. d.	
Agricultural Slaked Lime (air-slaked)	T.A.C. ..	65·1	Hydrate and carbonate	116·1	5·4	Hydrate and carbonate	78	1 15 0	Thomas Cameron, Lilydale
,, ,,	Argol ..	65·0	,,	116·0	·5	,,	75	2 5 0	Curdies Trading Co. Pty. Ltd., 145 Collins-street, Melbourne
,, ,,	White Rock No. 2	60·0	,,	107·0	2·0	,,	72	2 0 0	White Rock Lime Co. Pty. Ltd., 19 Queen-street, Melbourne
,, ,,	Snowflake No. 2	60·0	,,	107·1	1·8	,,	75	2 5 0	Evans Bros. Pty. Ltd., Yarra Bank-road, South Melbourne
Ground Limestone or Chalk	Argol ..	50·7	Carbonate	90·5	1·3	Carbonate	95	1 13 0	Curdies Trading Co. Pty. Ltd., 145 Collins-street, Melbourne
,, ,,	Lara No. 2 ..	39·2	,,	70·0	1·45	,,	50	1 0 0	Lara Lake Lime Co., Lara.

* Price is f.o.r. at Siding or nearest Railway Station.

W. R. JEWELL, M.Sc.,
Chemist for Agriculture.

Melbourne, 8th October, 1936.

Balanitis in Sheep

By W. D. Shew, B.V.Sc., Senior Veterinary Officer

BALANITIS, or "pizzle disease" as it is commonly called, is a disease affecting the male genital organ and sheath, causing quite a lot of trouble, and even loss, among wethers and sometimes also in rams. When the disease is prevalent, it occasions severe losses from the general unthriftiness of affected animals, and in severe cases quite a heavy mortality has been known to occur.

Cause of the Disease.

It has been found experimentally that balanitis can be produced without difficulty by simply tying the wool round the preputium, i.e., the duplicated fold of skin which forms a loose sac covering at the end of the penis. The inside of this sac is lined with mucous membrane, which is studded with glands. These glands secrete a fatty material, thus lubricating the parts.

The urine of sheep contains a high percentage of mineral salts, and, under certain conditions, these may be deposited in the bladder as a gritty sediment, even, in some cases, as small stones or calculi. This gritty urine, together with the products of decomposition of the urine, becomes mixed with the fatty secretion in the prepuce and sets up an intense irritation. Especially is this so when there is a matting of wool about the opening of the sheath. When this condition had been caused experimentally by tying the wool round the sheath it was found that the condition soon disappeared when the causative factor, i.e., the moist and offensive smelling wool, was removed, and the parts were thoroughly cleaned and dressed with a suitable disinfecting ointment.

That this disease affects wethers so much more than rams is due to the fact that, in the former, the penis is under-developed, and owing to castration at an early age, the growth of the prepuce is held in abeyance, causing the animal to urinate within the sheath during life. This accounts also for the disease being found more often in very young rams than in adults.

Predisposing causes of the trouble are the presence of grass seeds, which sometimes are found causing abscesses in the sheath, and the removal, at shearing time, of the long hairs growing from the end of the sheath. These hairs should not be cut, as they help to drain the sheath of deposited urine. In very severe cases, the flow of urine becomes completely blocked, causing rupture of the bladder followed by an early and painful death. In other cases a sloughing of the organs and sheath may be caused by stoppage of the blood circulation, and death may ensue from septicaemia.

The earliest symptoms of the trouble are restlessness and kicking at the belly with the hind legs. The affected sheep looks miserable, stands apart from the flock, and loses condition rapidly. When flies are active, affected animals often become struck about the sheath.

Treatment.

The wool surrounding the sheath opening must be cut short, in a circle of about 3 inches in diameter, and the prepuce and sheath gently squeezed to remove as much discharge as possible. The sheath should then be thoroughly washed, both inside and out, with a lysol solution containing one teaspoonful of lysol to a pint of water. When the parts have been thoroughly cleansed, a 2 per cent. solution of copper sulphate (bluestone) should be syringed into the sheath, and this should be repeated every second day until recovery takes place. Some owners find that better results are obtained by using oily disinfectant lotions rather than watery ones, in which case the lysol is mixed with olive or raw linseed oil instead of water. In other cases excellent results have been obtained by the use of a disinfectant ointment, it being found that an ointment is soothing and adheres to the inflamed surfaces better than disinfectants in the form of liquids. A suitable ointment can be prepared by mixing one part of monsol to ten parts of petroleum jelly or lard.

In very severe and obstinate cases, relief can be obtained only by slitting the sheath to enable the discharge to get away freely. This operation is carried out by placing the animal on its back and using a very sharp, sterilized knife to slit the sheath on the median line, but this should only be adopted when all other treatment has failed.

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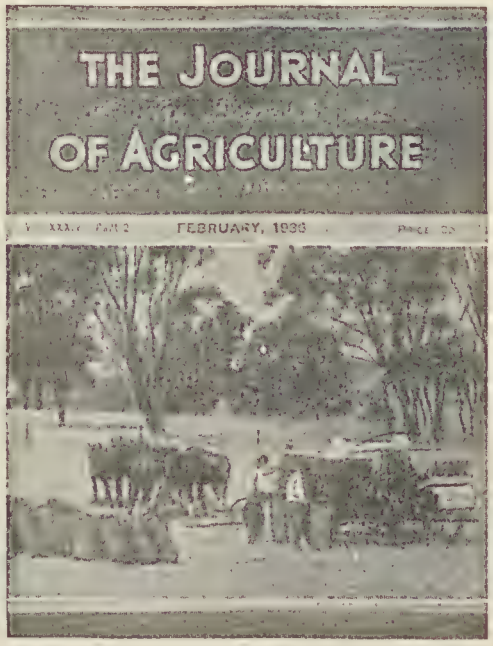

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Butter Production and Export

The following tables show :—

(*a*) Factory production of butter and cheese in Victoria for the months of July and August, 1936, compared with the corresponding months of 1935 ; and

(*b*) Quantities and percentages of various grades of bulk butter examined in Victoria from 1st July to 26th September, 1936, in comparison with the corresponding period of 1935.

FACTORY PRODUCTION OF BUTTER AND CHEESE IN VICTORIA (QUANTITIES IN TONS).

Month.	Butter.		Cheese.	
	1936.	1935.	1936.	1935.
July	2,451†	3,039	247†	285
August	3,698†	4,365	379†	367
Totals, 2 months	6,149	7,404	626	652

† Subject to revision.

BULK BUTTER EXAMINED FOR EXPORT IN VICTORIA (QUANTITIES IN TONS).

Period.	1936. How Graded—				Total.	Period.	1935. How Graded—				Total.
	Ch.	1st.	2nd.	Pty.			Ch.	1st.	2nd.	Pty.	
1st July to 29th August ..	787	314	106	17	1,224	1st July to 31st August ..	1,763	611	170	16	2,560
30th August to 26th September ..	1,886	824	159	15	2,884	1st September to 28th September ..	2,247	1,000	152	20	3,419
Totals 1st July to 26th September ..	2,673	1,138	265	32	4,108	Totals 1st July to 28th September ..	4,010	1,611	322	36	5,979
Percentages ..	65·0	27·7	6·5	0·8	..	Percentages ...	67·0	27·0	5·4	0·6	..

Metropolitan Postal District Scheme.

A revised edition of the Postal District Street Directory setting out the postal district numbers in the Metropolitan area is now available, and copies may be obtained free of charge at Money Order Post Offices throughout Victoria.

The Postal District Scheme has been designed to obviate delays in the delivery of mail matter, and when any article for Melbourne and suburbs is endorsed with its correct postal district number it automatically falls into a grouping which ensures its most rapid transmission to the post office of delivery.

Fertilizers Registered

Supplementary List

SUPPLEMENTARY LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1928 (No. 3680) FOR THE YEAR 1936.

Description of Fertilizer.	Brand.	Nitrogen.				Phosphoric Acid.				Price asked per ton.*	Where Obtainable.
		As Ammonia.	As Blood.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		
		%	%	%	%	%	%	%	%	£ s. d.	
Mainly Nitrogenous—											
Sulphate of Ammonia	Elephant.. ..	20·60	..	..	20·60	..	..	..	..	11 15 0	D. G. Wills (Melb.) Pty. Ltd., 249 Franklin-street, Melbourne
Leather meal ..	Fertilite	..	..	..	5·50 (as treated leather)	..	..	..	..	6 5 0	Cromwell Manufacturing Co. Pty. Ltd., 107–111 Cromwell-street, Collingwood
Blood Manure ..	Nutro	..	7·00	..	7·00	..	..	..	1·50	6 10 0	Dandy Tallow Pty. Ltd., Dandy Park, Dandenong
Containing Nitrogen and Phosphoric Acid—											
Bone and Super ..	G.B.P.	..	..	..	1·72 (as bone)	10·00	6·00	6·00	22·00	6 12 6	Gippsland Bone Products, Heart-road, Sale
Blood, Bone and Super	Clover	..	..	2·90	2·90	7·68	3·28	9·38	20·34	5 15 0	A. S. Miller, Avoca-road, Ararat
Blood and Bone ..	,, ...	..	..	4·76	4·76	..	9·81	6·17	15·98	7 0 0	A. S. Miller, Avoca-road, Ararat
,, ,, ..	F (reversed) MF over FFM in diamond, C.D.	..	..	6·50	6·50	..	5·00	7·00	12·00	7 15 0	F. F. MacDermott Pty. Ltd., 54 Market-street, Melbourne
,, ,, ..	Murka	..	..	5·05	5·05	..	6·45	9·93	16·38	7 5 0	Numurkah By-Products Pty. Ltd., Nurmurkah
,, ,, ..	W and M in diamond No. 2	..	..	5·00	5·00	..	4·50	7·50	12·00	7 0 0	Western and Murray Co-op. Bacon and Meat Packing Co. Ltd., 522 Flinders-lane, Melbourne
,, ,, ..	Nutro	..	..	6·50	6·50	..	4·50	3·50	8·00	7 5 0	Dandy Tallow Pty. Ltd., Dandy Park, Dandenong
,, ,, ..	Nutro Animal Fertilizer	..	..	5·00	5·00	..	4·50	2·50	7·00	5 17 6	Dandy Tallow Pty. Ltd., Dandy Park, Dandenong
,, ,, ..	Champion No. 1 ..	..	..	7·00	7·00	..	6·10	6·80	12·90	8 10 0	Sims Cooper (Freezing Works) Pty. Ltd., Henty House, 499 Little Collins-street, Melbourne
,, ,, ..	,, No. 2 ..	..	..	7·00	7·00	..	3·20	10·20	13·40	8 10 0	Sims Cooper (Freezing Works) Pty. Ltd., Henty House, 499 Little Collins-street, Melbourne
,, ,, ..	,, No. 3 ..	..	..	6·75	6·75	..	6·20	6·10	12·30	8 0 0	Sims Cooper (Freezing Works) Pty. Ltd., Henty House, 499 Little Collins-street, Melbourne
,, ,, ..	,, No. 4 ..	..	..	6·50	6·50	..	6·50	7·50	14·00	8 0 0	Sims Cooper (Freezing Works) Pty. Ltd., Henty House, 499 Little Collins-street, Melbourne
Bone dust ..	B†	..	..	..	3·25 (as bone)	..	..	..	23·20	6 10 0	T. Benson, Woodford
Bone Fertilizer ..	Valley	..	..	5·86	5·86	..	3·21	1·87	5·08	5 10 0	Goulburn Valley Freezing Works, Shepparton

* Free on rail at nearest place of manufacture. † Coarse material 50 per cent., Fine material 50 per cent.

Melbourne,
29th September, 1936.

W. R. JEWELL, M.Sc.,
Chemist for Agriculture.

Orchard and Garden Notes

By Edward E. Pescott, F.L.S.

The Flower Garden.

THE advent of summer brings in a change in the garden work. All bulbs and corms that have flowered, should now be lifted for storing. It does not matter if the foliage has not completely died away. With some bulbs, notably Hyacinths, it is an advantage to lift them before the foliage is dead. In storing, a dusting of lime (except for Ranunculus and Anemones) is advantageous.

The beds should be dug over, with animal manure or bonedust turned in, and then, when the soil is firm, any or all kinds of Summer annuals may be planted.

Chrysanthemum plants should be separated into distinct shoots, and these planted out in the garden in rows, or small clumps of from three to five plants. It is yet early for Dahlias and Gladioli; but the plots may be prepared for them by sowing green manure in the form of oats, tares, peas, rape or strong clovers, to be dug in, in about a month's time.

All flowering shrubs that have finished blooming should be well watered, trimmed where necessary, and given a top-dressing of old stable manure or of new soil. Azaleas and Rhododendrons will now need ample water, after flowering.

The Orchard.

The time is quickly approaching when fumigation or spraying with white oil will be necessary to clean up red scale in all citrus trees. Fumigation is preferable where tent outfits are available.

The present indications are for a good crop of apples and pears. In some districts, certain varieties will be somewhat irregular in bearing; but generally the crop should be an abundant one. It will be necessary, therefore, to keep a stout watch on all spraying for protection against codling moth and black spot. Growers are urged to follow as far as possible the departmental programme, copies of which can be had on application.

Chrysanthemum.

Codling sprays should now be given—one about 10 or 12 days after the first lead spray and another after the expiration of a further fourteen days. The lead spray is given at the rate of 5 lb. of arsenate of lead paste in 80 gallons of water. For further black spot control, 6 oz. bluestone and 6 oz. of freshly slaked lime should be added to each 80 gallons of lead spray.

Jonathan, London Pippin, Yates and Dunn will russet with a complete bordeaux spray; therefore lime sulphur should be used for the later spraying of these varieties. Lime sulphur and lead sprays should be applied separately; but if this is impracticable, the lead may be added to the diluted lime sulphur immediately before spraying.

The Kitchen Garden.

In this section too, the change of season is operating, so that the digging and manuring of the beds is important. Stable manure or green manure may be dug in. Failing this, a complete market garden manure, or else a mixture of bone and blood, should be used; about six ounces per square yard should be dusted over the ground before digging.

[*Continued on page 608.*

Licensed Skin Buyers

Sheep Owners Protection Act

Following is a list of persons licensed under the Sheep Owners Protection Act to buy raw sheep skins. The licences have effect until the 31st December, 1936.

Licence No.	Name.	Address.
173	Abikhair, H. ..	Rushworth
101	Alam, G. ..	Delegate
112	Allan, J. R. ..	207 Murrumbeena-road, Murrumbeena
194	Anthony, A. L. ..	511 Urquhart-street, Ballarat
5	Austin and Ford ..	Hopetoun
158	Barrett, H. L. ..	Bond-street, Sale
181	Barry, A. T. H. ..	Minyip
131	Bartlett, A. E. ..	Warren-street, Echuca
125	Bates, E. W. ..	27 Lonsdale-street, Hamilton
102	Beck, E. H. ..	Box 92, Murrayville
19	Bendoc Stores ..	Bendoc, via Delegate
150	Bennett, S. C. ..	5 Margaret-street, North Geelong
49	Beggs, H. A. ..	Commercial-street, Korumburra
50	Black, S. ..	Streatham
185	Bodycomb Trading Co.	45 Foley-street, Kew, E.4
197	Bond, W. E. ..	Antwerp
35	Borthwick and Sons	84 William-street, Melbourne
155	Bourke, D. ..	89 Cox-street, Hamilton
127	Braebinder, L.C. ..	10 Redan-street, St. Kilda
128	Braebinder, E. ..	10 Redan-street, St. Kilda
195	Bridges, T. ..	Ballarat North P.O.
140	British and Eastern Wool Co.	80 Errol-street, North Melbourne
121	Brooks, J. F. ..	Quambatook
70	Burns and McCleave	206 Mair-street, Ballarat
20	Burrows, A. ..	Kerang
51	Burt, R. and Co. ..	Kirkland-street, Euroa
160	Butler, E. and Son	Tallangatta
36	Butler, R. A. ..	294 White Hills-road, White Hills, via Bendigo
179	Callan, P. J. and Son	Geelong
87	Cameron, J. J. ..	Manangatang
52	Canfield, E. ..	Victoria-street, Rochester
37	Carmody, I. L. ..	74 Curtain-street, North Carlton
133	Clark, J. ..	Box 92, Hamilton
134	Clarke, J. T. ..	Horsham
61	Clarke, V. F. ..	Victoria-street, St. Arnaud
106	Clarke, W. J. ..	Ouyen
11	Collins, H. G. ..	Kaniva
156	Cook, N. J. ..	Allansford
100	Cooke, E. J. ..	Murrayville
53	Coulstock, T. ..	Kyabram
123	Curran, J. M. ..	Annuello
144	Curry, T. ..	St. Arnaud
141	Dallimore, P. J. ..	23 Nelson-street, Colac
182	Deed, Geo. ..	Mitiamo
209	Delfindahl, O. C. ..	Box 134, Orbost
21	Dent, B. C. ..	Delegate
28	Devine, P. and Co.	McDonald-street, Numurkah
120	Diamond, C. ..	5 Bond-street, Sale
67	Dimboola Stores ..	Dimboola
54	Downs, A. ..	Wills-street, Dunkeld
166	Duggan, T. ..	Mollison-street, Kyneton
88	Egan, B. F. ..	Box 73, Portland
167	Egan, F. ..	Tanwood, via Avoca
68	Elliott, A. ..	Merino
153	Ellis, J. M. ..	39 Roberts-street, Essendon
116	Evans, C. J. ..	Hamilton
2	Evans, W. J. ..	Mysia
3	Ferguson, F. ..	Market Square, Bendigo
12	Ferris, J. A. ..	Box 90, Warrnambool
105	Ferris, R. L. ..	Langley P.O., via Kyneton
82	Fieghen, G. ..	Bridgeport-street, Daylesford
204	Fox, G. ..	Albert-street, Port Fairy
92	Freeman Bros. ..	Box 4, Warracknabeal
130	Freeman, W. G. ..	Elmore
55	Frice, W. J. ..	Box 139, Hopetoun
62	Fryberg, M. ..	Box 4, Rushworth
43	Gelbart, D. M. ..	20 Wilson-street, North Carlton
13	Gilbert, F. C. ..	View-street, Charlton
14	Gillies, A. A. ..	Campbell-street, Traralgon
101	Glazebrook, J. C. ..	Commercial-street, Yarram
109	Gordon, C. G. ..	83A Capel-street, West Melbourne
189	Gorman, J. G., and Brady, T. M.	Minyip
6	Gorton, A. H. ..	Box 24, Alexandra
165	Grant, D. A. ..	Nhill
147	Greenaway, K. ..	Mansfield
103	Gregory, T. K. ..	Murchison
138	Grigg, G. R. ..	Woorinen
117	Grist, B. ..	2 Roeder-street, Ironbark
45	Gross and Co. ..	161 High-street, Echuca
192	Haines, G. ..	White-road, Wonthaggi
23	Hardy, F. A. ..	Hardale, Myamyn
93	Hardy, J. H. ..	Campbell-street, Port Fairy

Licensed Skin Buyers—*continued.*

Licence No.	Name.	Address.
72	Hargreaves Bros. ..	Barkly-street, Ararat
161	Hargreaves, W. H.	Highway Supply Stores, Wycheproof
79	Harper, W. ..	Alberton
24	Harris, L. ..	Rupanyup
115	Hase, H. ..	Omeo
80	Hassall, W. E. ..	King-street, Rainbow
73	Haughton, W. and Co.	545 Little Collins-street, Melbourne
63	Hill, H. ..	Box 181, Warracknabeal
94	Holdsworth, J. ..	Boinka
122	Howard, E. ..	Wood-street, Donald
25	Hudson, A. A. ..	Culgoa
15	Hunting, G. ..	88 Hotham-street, St. Kilda East
176	Jackson, J., Pty. Ltd.	Bairnsdale
190	Jeffrey and Hulme	Hare and Anstruther streets, Echuca
16	Johnson, A. P. ..	Station-street, Lake Boga
89	Jones, E. V. ..	Box 20, Harrow
78	Kelly, W. A. ..	Penshurst
104	Kennon, J. and Son	River-street, Richmond
154	Kerr, J. J ..	East Colac on Prince's Highway
56	Kewin, R. F. ..	Box 13, Corryong
4	Khan, B. ..	Market-street, Bendigo
110	Khan, R. ..	Derby-road, Maryborough
95	Khan, V. ..	Ballarat East
17	Khawaja, K. ..	105 Latrobe-street, Melbourne
74	Kilroy and Story ..	Heathcote
46	Lawton, W. J. ..	84 Pakenham-street, Echuca
162	Lew, Z. ..	729 Drummond-street, North Carlton
143	Lindsay, D. ..	Charles-street, Jeparit
199	Linke and Taylor ..	Box 105, Hopetoun
90	Lipton, F. ..	157 Arnold-street, Princes Hill, N.4
26	Lloyd Bros. and McGinnis Pty. Ltd.	644 Bourke-street, Melbourne
206	Long, C. J. ..	Westbrook-street, East Kew
99	McColl, D. ..	Tatura
27	McGrath, B. F. ..	Wilson-street, Wodonga
201	McGrath, J. ..	440A Wilson-street, Albury
7	McGrath, J. D. ..	440 Wilson-street, Albury
18	McGuire, L. ..	Murphy-street, Rutherglen
28	McInnes, N. C. ..	96 Shannon-avenue, Newtown, Geelong
47	McIntosh, D. ..	Woomelang
149	McLaughlin, W. and Co.	19 King-street, Melbourne
139	McLean, A. ..	Benalla
83	McLean, N. ..	Glenthompson
111	McLennan, D. J. ..	Sea Lake
107	McNamara, F. J. ..	Box 31, Numurkah
29	McPhee, C. C. ..	Beulah
84	Marshall, G. ..	Edenhope
146	Moir and Debney, ..	High-street, Heathcote
113	Moore, D. R. ..	Kilmore
205	Morrison, G. ..	Mildura
132	Munro, H. J. ..	Murray-street, Casterton
30	Niddrie, L. G. ..	Hamilton
31	North-Western Wool and Skins Stores	Swan Hill
69	Nunn, P. ..	Orr-street, Yarrawonga
75	O'Beirne, J. and F.	Linton
32	O'Brien, W. J. ..	526 Wilcox-street, Albury, N.S.W.
210	O'Keefe, K. P. and J.	Carnegie
169	O'Shea, J. J. ..	Lalbert
164	Papal, C. ..	Cobden
198	Pappas, Mrs. E. V.	Yarrawonga
35	Parrot, E. R. ..	19 Steinfield-street, Ballarat
33	Payne, A. ..	Box 89, Nyah West
177	Penney, J. and Son	422 Ascot-street, Ballarat
202	Perry, A. J. ..	25 Nelson-street, Colac
172	Petrie, J. ..	Buangor
143	Pettitt, R. ..	McMahon-street, St. Arnaud
188	Phillips Co-op. Society	Main-street, Minyip
136	Phillips, T. J. ..	Mologa
196	Purss, A. ..	Corryong
108	Pyke, A. L. ..	Darlington-road, Stawell
91	Pyramid Co-op. Stores	Pyramid
77	Quarrell, C. ..	Cobden.
48	Rehfisch and Co. ..	223 Mair-street, Ballarat
8	Rice, J. W. ..	Welsford-street, Shepparton
81	Rice, W. ..	Bombala
71	Rich and Gross ..	Brougham-street, Geelong
39	Ruedin, W. V. R.	42 Proud-street, Bendigo
170	Scott, A. B. ..	Box 49, Stawell
171	Scott, J. G. ..	Thompson-street, Maffra
118	Searles, J. ..	27 Madden-avenue, Mildura
163	Sharman, W. ..	High-street, Echuca
207	Shinberg, M. ..	109 Arnold-street, North Carlton
137	Shirra and Wallis ..	Box 169, Geelong
159	Short, I. W. ..	Box 128, Hamilton
119	Silverthorne, A. J.	27 Dalgety-street, St. Kilda
40	Sims, Cooper and Co.	499 Little Collins-street, Melbourne
85	Sleep, J. ..	13 Mantell-street, Coburg
114	Smith, A. W. ..	High-street, Mansfield
76	Soding Bros. ..	High-street, Charlton
184	Soulsby, G. ..	Brooke-street, Inglewood
57	Sproal, H. ..	Box 13, Macarthur
151	Sproul, J. ..	Wagra-street, Tallangatta
124	Stanton, J. ..	Nhill
183	Stapleton, J. ..	Nar-nar-goon
157	Stephens, J. ..	Colac
58	Stuart and Co. ..	Box 4055, Melbourne
186	Sturgeon, E. T. ..	Maryborough
152	Sulman, R. E. ..	Echuca Freezing Works, Echuca
64	Taylor, H. and Son	Box 86, Birchip
129	Teasdale, R. L. ..	High-street, Charlton
191	Thomas, R. M. ..	Wood Wood

LICENSED SKIN BUYERS—*continued.*

Licence No.	Name.	Address.	Licence No.	Name.	Address.
96	Ticehurst, T. ..	Ultima	142	Waters and Harris	Victoria-street, Warragul
200	Todd, P. ..	533 Stanley-street, Albury	66	Waters, S. H. and Co.	Box 158 B, Melbourne
65	Turner, K. F. ..	Box 29, Maryborough	34	Wedd, L. B. ..	Romsey
126	Tydeman, G. D. ..	Horsham	174	Westphalen, W. R.	Yaapeet
178	Vines, A. A. ..	Robinvale	9	Willoughby, L. ..	St. Arnaud
86	Voges, A. V. ..	Ballarat-road, Hamilton	98	Wilson, H. ..	100 Watt-street, Wonthaggi
203	Walker, F. H. ..	"The Orchard," Romsey			
168	Warden, E. ..	Railway-avenue, Beechworth	175	Wilson, H. ..	Rainbow
			1	Wingfield, E. H. ..	Charlton
145	Waring, J. ..	27 Skene-street, Hamilton	187	Wood, H. L. ..	Balmoral
208	Warnock, R. ..	High-street, Yea	193	Wright, N. ..	Pine Lodge
180	Waters, F. H. ..	Wodonga	97	Young, H. ..	Orford

Orchard and Garden Notes

(*continued from page* 605).

Although lettuce crops are grown all the year round, it is now time to sow seed or set out seedlings of summer types of lettuce. These require a well manured and well drained soil, and they should be well watered with overhead waterings on sunny or windy days. An occasional forcing with superphosphate or blood manures will be beneficial.

Young tomato seedlings may be set out in sunny situations, they should be placed in as good a soil as possible. It is wise to stake the plants as they grow, in the home garden particularly.

Asparagus beds should be cut over regularly, and must always be well watered. They should be weeded and an occasional dressing of superphosphate given.

When root crops, such as carrot and parsnip are dug, surplus roots should be laid horizontally in the soil for future use. This will prevent them from growing for sometime.

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For further details, consult your local Stationmaster, or the Victorian Government Tourist Bureau, Queen's Walk, Melbourne (Branch Office, Spencer Street Station), Tel. Central 2042.

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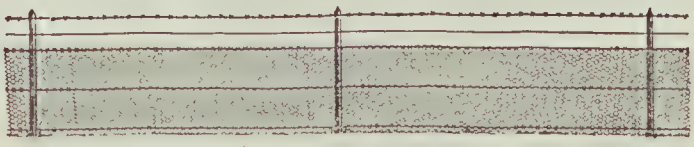

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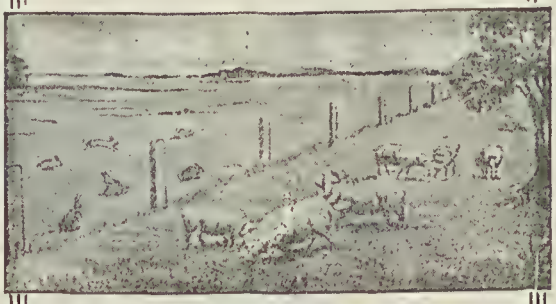

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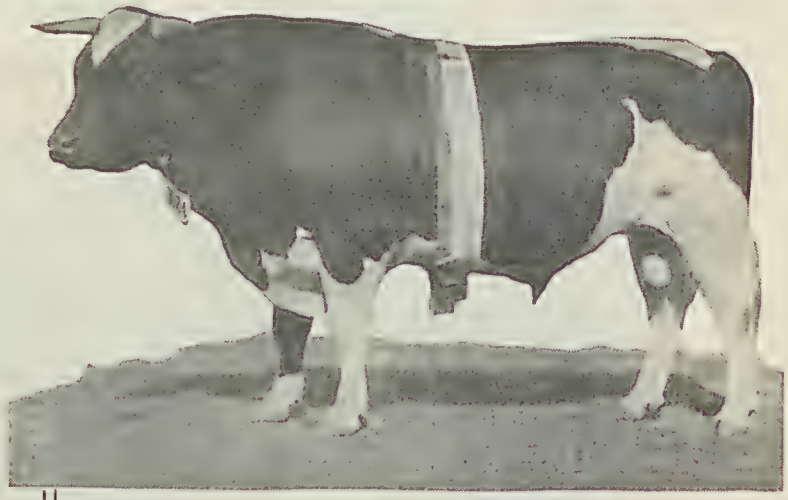

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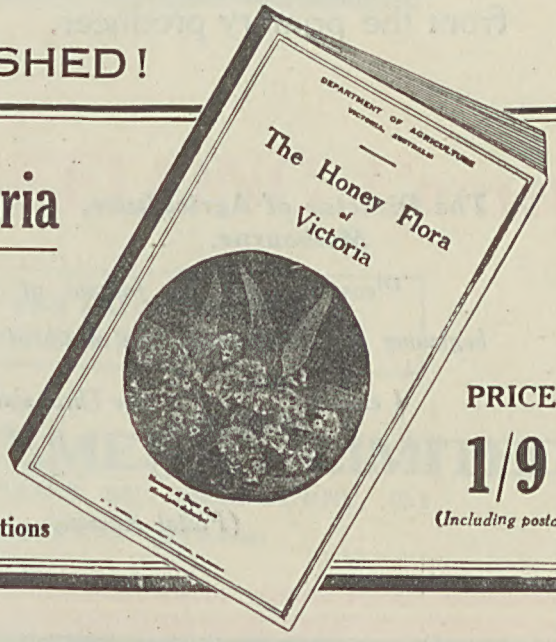

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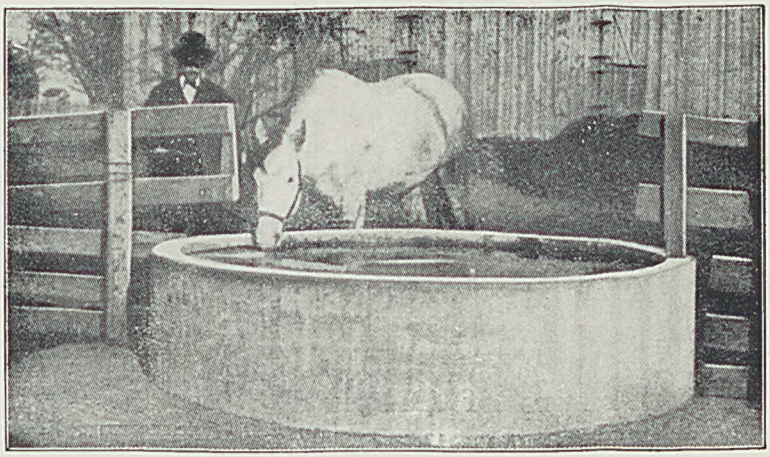

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